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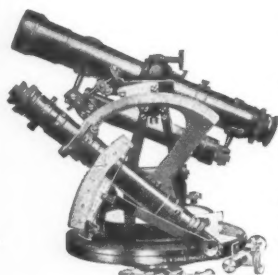
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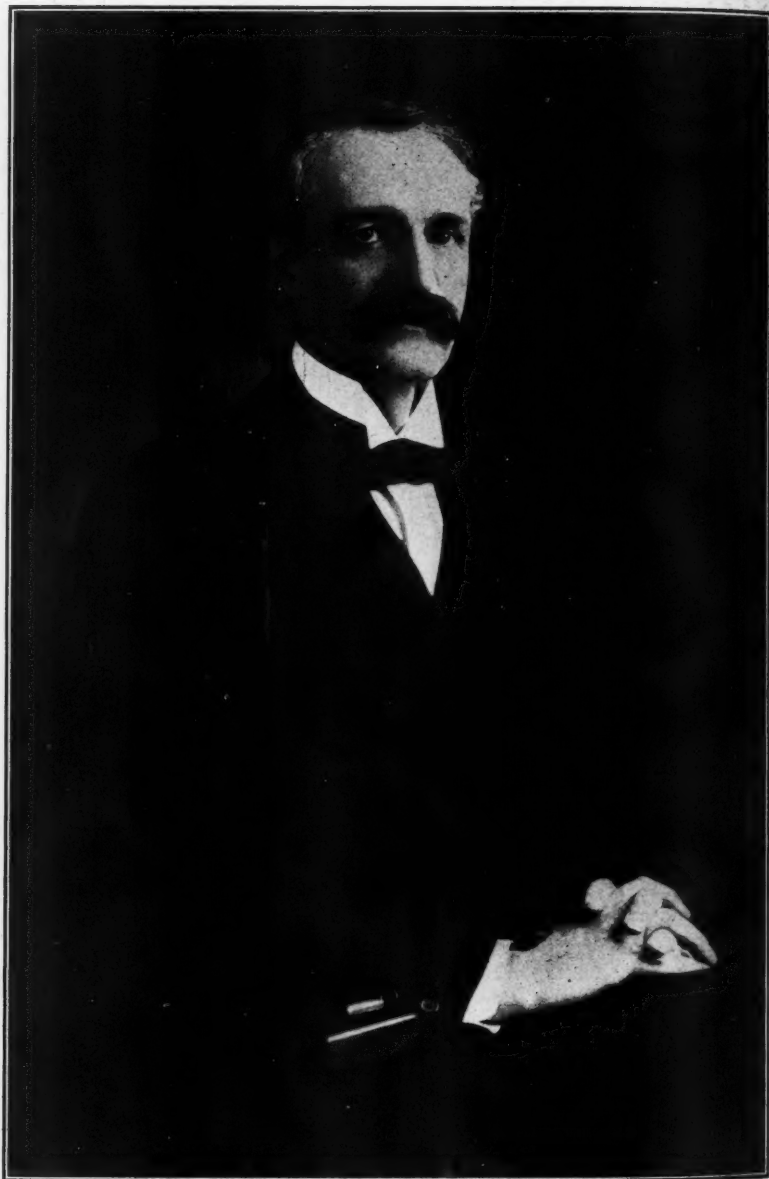
FRANK GLOVER HEATON }  
THOMAS ELMER WILL } *Editors*

## CONTENTS FOR JULY, 1908

PORTRAIT OF HON. GIFFORD PINCHOT.....	Frontispiece
<i>Illustration for "The New Commission," page 380</i>	
THE WORK OF THE SPOILERS—By A. B. Plowman .....	363
<i>Illustrated</i>	
THE DEATH OF THE FOREST— <i>Poem</i> —By Lillian H. Shuey.....	369
WATER CONSERVATION IN ARIZONA—By W. B. Mershon.....	370
<i>Illustrated</i>	
THE NEXT GENERATION'S REPROACH AGAINST ITS ANCESTORS— <i>Poem</i> —By Richard H. Douni Boerker.....	372
FOREST TREE NURSERIES—By Q. R. Craft .....	373
<i>Illustrated</i>	
THE NEW COMMISSION.....	380
<i>With frontispiece illustration</i>	
WORK IN A NATIONAL FOREST—By Charles Howard Shinn.....	383
EDITORIAL	
The Conservation Commission.....	387
"United We Stand".....	388
Mountain Forests and Floods.....	390
By Way of Reply.....	396
The Question of Snow.....	391
Where There Are No Snows.....	391
Nominate Members .....	392
Conservation of Human Resources.....	392
The Forestry Fight in Denver.....	392
"Bureaucracy".....	393
Government "Taxes" .....	394
NEWS AND NOTES	
Irrigation Development in Washington.....	395
Reclamation Work for Socialist Settlement.....	395
Big Project for Palouse Country.....	397
American Irrigation Scheme.....	398
More Resolutions .....	398
Government to Study Shelterbelts.....	399
Wood-pulp Report .....	401
France's Far-sighted Forest Policy.....	402
The American Nile .....	403
THE DRYAD'S LAST STAND— <i>Poem</i> —By Victoria Elisabeth Gittings... ..	404
<i>With decorations</i>	
IN THE DEPARTMENTS	
Washington National Forest.....	406
Reclamation in the Northwest.....	406
World Prevent Spring Floods.....	408
Forest Service Supply Depot at Ogden.....	409
Map of the Grant's Pass Quadrangle.....	409
FOREST CONSERVATION—By R. A. Long .....	410
<i>Paper read at the White House Conference</i>	

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HON. GIFFORD PINCHOT

Chairman of the Executive Committee of the Newly Appointed Commission on the Conservation of Natural Resources



# FORESTRY AND IRRIGATION

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No. 7

## THE WORK OF THE SPOILERS

How the Finest Hardwood Forests on the Continent, in Western Ohio,  
Have Been Ravished—The Result

By A. B. PLOWMAN, Department of Botany, Beaver College

IT IS the writer's purpose to record briefly in this paper some of the facts gathered in a study of the forestry conditions in Western Ohio in the summer of 1907.

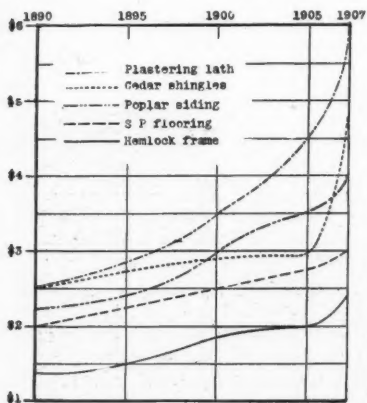
Here, as everywhere in the United States, probably the most striking fact in connection with the whole problem of timber-supply is the unprecedented advance in the prices of lumber during the last few years. The graph chart, Fig. 1, based upon quotations supplied by one of the largest retail lumber dealers in Western Ohio, will serve to show, better than figures or any mere statement in words the nature of this advance in prices since 1890. The conspicuous feature of this chart is the excessive steepness of the graphs for the last period represented, 1905-1907. This is especially noticeable in the case of plastering lath and cedar shingles. We observe that in the seventeen years covered by the chart, the price of lath has advanced one hundred forty per cent.,

while the price of shingles has increased ninety per cent. But even more significant is the fact that, of the one hundred forty per cent. advance, sixty per cent., or three-sevenths, has occurred in the last two years; and of the ninety per cent. advance on shingles, seventy-four per cent., or nearly five-sixths, is included in the same two years.

Of course these prices are but little, if at all, dependent upon local forestry conditions, but they constitute a highly important element in the local problem of timber supply. And, in passing, it may be remarked that in the region under consideration, there is a rather general belief that the present high tide in timber prices is as largely due to tariff, freight rates, and corporation control as to any actual or threatened failure in the natural supply, either here or elsewhere. Comment is unnecessary.

The territory included in this study is limited to the western tier of coun-

ties in the State of Ohio. These constitute an area about twenty-five miles wide and one hundred eighty miles long, extending from the Ohio River to the latitude of Lake Erie. Practically all of this area lies in the range of graphical activity, and morainic features are conspicuous throughout. The



Graph chart of retail prices of lumber in western Ohio.

southern portion, to a little above the middle of Darke County, is a rolling, low hill country, while the northern portion is quite flat. The prevailing soil of the southern portion is a rich red clay, except in the narrow stream valleys, which are made up of a heavy black loam of remarkable fertility. In the northern part the soil is somewhat less fertile, consisting in part of sand, and elsewhere of white clay, which requires expensive drainage to yield the best results for agriculture. The lowest part of the section is, of course, along the Ohio River, where the elevation is about five hundred feet above sea level. Darke County is the highest part, practically all of it being somewhat more than one thousand feet above sea level. The prevailing bed-rock is limestone, which crops out very generally in the southern part, and is quarried in considerable quantities for the manufacture of lime, and, also, to some extent for building stone. The rainfall is fairly uniform over the region, amounting to a little more than forty inches per an-

num in the northern portion and a little less than that amount in the southern portion.

The region under consideration constitutes a belt through what was at one time probably the finest hardwood forest in the United States. Here grew, in a high degree of perfection, white and red oak, walnut, hickory, maple, elm, beech, locust, sycamore, wild cherry, cottonwood, poplar, Kentucky coffee-tree and chestnut, not to mention several less valuable kinds of trees. The quality of this timber was the very finest throughout the entire belt.

As in every timber country, the first work of the pioneers in this region was to clear sufficient land in the forest to raise the necessary crops. Much of the finest timber was "deadened," or girdled, and when, after two or three seasons it had dried sufficiently, it was felled in great heaps and burned. Only the straightest most perfect sticks of walnut and oak were used in building the log houses and barns. The sterling quality of this timber is manifest in the remarkably well preserved log structures still standing in considerable



A Typical White-oak Grove

numbers throughout the region. The roofs of these buildings were made of clapboards, rived with frow and beetle from only the finest sticks of oak, and it was not uncommon for such a roof to last for forty years or more. It often happened that several trees would be cut down before a perfect one was found for the making of clapboards; all the others were left to rot where they fell.

During the first half of the last century there was a large demand for tanbark to supply the needs of the growing leather industries of Cincinnati and the neighboring towns. To meet this demand, the oak timber was ruthlessly slaughtered over an area of seventy-five to one hundred miles radius. The fine logs, then useless, were piled together and burned. These old-time

would be better off *without a timber-tree standing in it!*" This is no doubt an extreme case, but there is certainly very little sentiment in the region in favor of forest preservation or renewal. The inevitable result of such an attitude on the part of the people is being reached at a rapid rate. Over most of the region the first-class timber disappeared several years ago, and the



WASTEFUL METHODS OF LUMBERING

Total Clearing of Land is Only Method in Use in Western Ohio

log-rollings, with their attendant barbecues, were the festival occasions of the frontier communities.

To the early settlers these forests constituted the arch enemy, to be driven back and destroyed by ax and fire. Little did these men think of the value of the forests. To them it meant only a fight for life and success against the forces and conditions of nature. Unfortunately, this instinct for timber destruction, born of necessity among the pioneers, has developed among their descendants into a blind, unreasoning mania. One prominent landowner and stockman of Drake County recently expressed the view that "the country

second- and third-class supply is rapidly following.

Immense damage to the timber of this region has resulted from too close pasture of the woodlands. The writer had an opportunity to keep under observation for several years a tract of fine oak timber in which were kept large numbers of hogs. The soil was constantly overturned by the hogs, and many of the smaller roots of the trees were exposed and destroyed. After a few years the trees began to die at the tops, and the owner was obliged to sell the timber for only a fraction of what it would have been worth at the present time if it had been more carefully pre-

served. Close pasturing by cattle and sheep has proved equally destructive in many cases.

From replies to inquiries directed to the Commissioners of several counties it has been learned that in all but two of the counties the local supply of timber has failed to meet the demand for fence posts, barn-frames, etc., for from five to twenty-five years. Naturally this depletion is more complete and of longer standing in the southern part of the zone, in the region of earlier settlement and more dense population. The counties reporting an excess of timber and considerable exportation are Darke and Williams. Darke County is at present shipping out small quantities of oak, walnut, elm, ash and hickory. A leading dealer in lumber in that county estimates the total hardwood cut of Darke County for 1907 at nearly five million feet. He also estimates the present stumpage of the county at over one hundred fifty million feet, which the present writer has reason to believe is too high an amount, even including low-grade culls. As for *first-class timber*, as that would have been interpreted twenty years ago, there is none of it left. Williams County is shipping less, and has probably a smaller supply but it is of somewhat better quality, as it has not been so thoroughly picked over.

The price of white oak timber on the stump last season was reported as from \$20 to \$40 per thousand; the lower prices prevailing in the southern part of our range, the higher prices in the north. The explanation of this is to be found in the fact that the remnant of merchantable timber in the southern part is of very low grade, and rarely of sufficient quantity to justify the installation of local mills. Of significance in this connection is the fact that a large tight-cooperage factory which had operated for several years in Darke County, was forced sometime ago to close down for lack of suitable material. A hardwood lumber dealer of the same county reports a slight falling off in the price of finished hardwood lumber in the last few

years. This would be a most remarkable state of affairs, were it not for the fact that the product has declined in quality even more rapidly than prices on first-class materials have advanced. In like manner we may account for the fact that prices of railroad ties, cord-wood, etc., have advanced less rapidly in this region than the failing supply would seem to warrant.

While the general relation of climate to forests is yet a mooted question, it seems fairly well established that, in the region under consideration, local "blizzards" are more frequent and more severe, while the summer winds are more often dry than they were a generation ago. Spring floods and summer droughts, formerly quite unknown, are growing more common. Many of the hills, denuded of their forests and later of their soil, are now quite barren. Throughout the region the growing of fruit orchards is becoming constantly more difficult. This is, no doubt, due, in part at least, to the increased exposure of the trees to an ever more fickle climate, as well as to the more persistent attacks of tree-infesting insects, which are deprived at once of their natural enemies. For as a consequence of the destruction of the forests the insectivorous birds have been greatly reduced in numbers.

The southern four counties in this range have long been noted for their splendid natural water supply. Along every stream valley the ground-water outcrops at frequent intervals from strata of coarse sand and gravel overlying the limestone. Many of these springs, for a hundred years never known to fail, have, since the removal of the back-lying forest, become but "wet-weather springs," absolutely dry in late summer. Over large parts of this area the ground-water level has fallen several feet in the last twenty years, so that wells have had to be dug or drilled to a greater depth to insure a constant water supply. At the same time the problem of drainage is growing more difficult. Small creeks and open ditches, formerly well filled with water the year

around now run almost dry during a good part of the summer, and become choked with a rank growth of weeds which must be removed, else the stream will be completely filled with silt at the next flood season.

Owing to the high fertility and excellent quality of most of the soil in Western Ohio, it seems quite unlikely that there will ever be any extensive plant-

(*Gleditschia triacanthos*), which, when close grown in good soil, is tall, straight, and smooth. This tree makes most excellent fence posts, which easily outlast two sets of oak or cedar posts. The honey locust also grows rapidly on the denuded hills of the region, and would prove a very profitable crop in such situations. The common or black locust (*Robinia Pseudacacia*)



NATURAL REFORESTATION

Mixed Growth That Calipers Six to Eight Inches Eighteen Years After the Land Was Totally Cleared

ing of forests in that region. That reforestation would be an extremely simple matter is at once evident from some of the views accompanying this paper. Two of the views herewith show a small tract of eighteen-year-old growth which sprang up after complete clearing of the land. The original forest was composed mainly of white oak, American elm, walnut, and hickory, and a considerable percentage of ash and honey locust. This tract has afforded pasture for a few cattle, and is in excellent condition. With proper care and a very little improvement cutting, it will in a few years begin to yield good returns. The most rapid growth is made by the honey locust

is very generally distributed over Western Ohio, but its timber is of little value, owing to the destructive attacks of the locust borer. No doubt this tree could be grown with profit if planted in large groves and properly cared for.

As stated before, however, there is but little if any interest shown by the people in the matter of tree planting. It is true that shade-trees are quite commonly planted along the streets of towns and villages, and in public grounds generally, but this practise has not yet extended to the public highways, or even, to any extent, to the rural school-grounds. Most of the counties report a growing interest in Arbor Day among the schools, but that

interest seems for the most part to be only short-lived and ineffective. The trees most commonly planted for shade and ornament are soft maple, American elm, and Carolina poplar. Fortunately most of the region has gotten over the craze for the unsightly *Catalpa bignonioides*. Evergreens are but little known, except for cemetery and lawn decoration. *Juniperus communis* grows

give any attention to preserving and making the most of the farm wood-lot. No precautions are taken to prolong the usefulness of fence posts and timber. From sheer necessity, substitutes for wood in house construction are being introduced. Brick, stone, and concrete blocks are slowly coming into use for this purpose. Fences, until recently built of rails, are now more com-



MIXED SECOND GROWTH

Honey Locust, Ash, Hickory and Walnut. Eighteen Years Old and Five to Seven Inches in Diameter

native to some extent as an insignificant shrub. No doubt the more useful oaks and walnuts would be more generally planted if the people knew how to handle these less tolerant trees successfully.

In no region is there more urgent need of popular education in matters pertaining to forestry and timber supply. For generations these people have been learning and practising the art of forest destruction. Before they can be expected to show an active interest in the preservation and renewal of forests, there must be created in their minds a totally new conception of the whole problem. Very few of the land owners

monly made of wire. Yet, the shortage of timber and the consequent inconvenience are growing more apparent every year.

The area which we have chosen for study represents in cross section, as it were the conditions of the entire Ohio Valley. For more than a hundred years the people have been striving to get rid of the finest hardwood forests in America. Success has all but crowned their efforts, and they have scarcely begun to realize at what tremendous cost their victory has been bought. Reforestation would be a comparatively easy matter, but the high agricultural value of the land is practically prohibitive.



All that is left for this region to do is to make the most of the remnant of its forests, and to urge upon the Government the absolute necessity of establishing, upon less valuable lands, hard-

wood forest reserves, which, under wise administration, may make up in some measure for the reckless timber destruction in the past at the hands of private owners.



### THE DEATH OF THE FOREST

By LILLIAN H. SHUEY

THE fiat went forth from the spoilers—  
 The myrmidon sons of men—  
 That the forest, the warder of rivers,  
 Should pass from the valley and glen;  
 The forest, embracing the passes,  
 Where the drifting sea-clouds bide,  
 Should lie as low as the heather—  
 Should die on the mountain side.

And the murmuring groves on the ridges  
 Heard in the morning still  
 The ax-blows resounding, repeating  
 The rumble and roar of the mill.  
 The vast forest mourned to the brooklets:  
 "Beloved, the hour has come.  
 The Day God will drink at thy spring-pools,  
 And the voice of thy music be dumb.

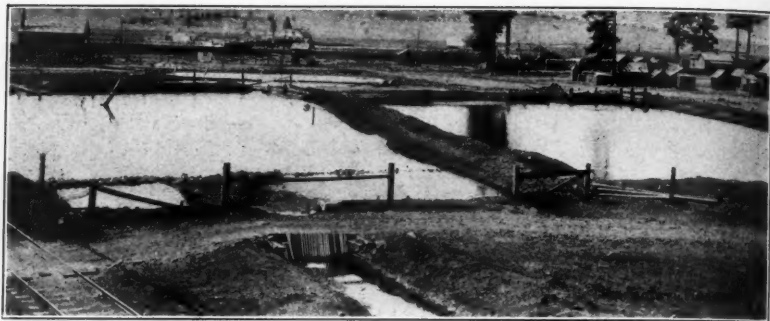
"No more wilt thou well to the valleys  
 Where children are glad and sweet.  
 No more wilt thou mirror their faces,  
 And ripple around their feet.  
 Farewell! lovely streams, overflowing,  
 The grasses thou lovest will fail;  
 No more wilt thou gleam for the homestead,  
 The orange and peach in the vale."

The birds flew far and were silent,  
 The west wind sobbed in pain,  
 And bore in the eve her teardrops  
 To the barley blooms on the plain.  
 The forest stood, lofty, majestic—  
 The redwood, and cedar, and pine—  
 The forest, preserver of nations,  
 The crown of God's great design.

But the deed was done in its madness,  
 And the wind-swept mountains bare  
 Grieve for the cool, sweet bowers  
 And the kiss of raindrops there.  
 Men in the parching plain-lands  
 Their long rain prayers *awow*,  
 But the bread and the wine are taken,  
 And God does not answer now.

—*Western World*





Box Factory Reservoir

## WATER CONSERVATION IN ARIZONA

From a Letter from W. B. Mershon, Saginaw, Mich.

ARIZONA is a remarkable country. It is noted for its desert character; yet at the same time it has natural forests and a lumber industry. The desert character of the country is being changed by irrigation, for which extensive reservoirs have been and are being constructed. The illustrations with this article, however, show that reservoirs in Arizona may utilize the scanty water resources of the region in other ways than by irrigation.

The Saginaw & Manistee Lumber Company, a Michigan concern, is engaged in cutting lumber in the neighborhood of Williams, Ariz. For power

the company uses steam, and water is obtained from reservoirs filled by the rain and by the melting of the snow in the mountains. When the company took hold of this enterprise, several years ago, they found themselves confronted with a serious shortage of water. There had been a drought for several years, and everything had dried up. They were compelled to haul water in tank cars from Winslow, via the Santa Fe Railroad. Their water supply in one year cost them \$30,000, and they were considering the abandonment of this piece of lumbering as unprofitable.

The Perrine reservoir, shown among



Kaufman-Arey Reservoir



Reforestation around Reservoir

the views, had cost \$15,000 to construct. It stood empty, and by reason of lack of water and disintegration, it looked as though it might cost still more.

About four years ago, however, things began to look different in Arizona. There was snow in the mountains in the winter time; and more frequent rains in the valleys cheered the residents. Additional reservoirs were made, and every bit of water conserved where it was possible to do so.

The pictures herewith were taken something over a year ago, and at that time the manager, in sending them to Michigan, was able to accompany them with the cheering statement that he believed the water accumulation then on hand was sufficient to last more than a year, even if there were not another drop of rain.

The views are interesting as show-

ing the different classes of reservoirs or catch basins used in Arizona for saving water. Evaporation is considerable in that climate; yet it is believed that these bodies of water will be sufficient to keep steam in the engines during the long drought period. Lumbering in Arizona is said to be a hard proposition, however, all costs being double or more those of more favored localities.

The views are interesting further in showing attractively the growth on the margins of some of these water basins. The growth is the western yellow pine.

These pictures are furnished by Mr. W. B. Mershon, an officer of the lumber company, and a member of the American Forestry Association and of the Michigan Forest Commission.

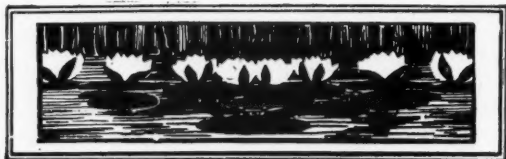
Mr. Mershon is doing some extensive tree planting on land he owns in Michigan. On bottom lands along a river he is putting out a considerable



Water Storage in Arizona

quantity of basswood, which, being a rapid grower, native to the locality, and more valuable for its white wood before reaching maturity, may give a harvest sooner than some other species. The white and Norway pine planted on

higher land may take seventy years to mature, but Mr. Mershon says that by the time his children are as old as he is there will be so much of value on this piece of land, now waste, that they will appreciate it as a fine legacy.



### THE NEXT GENERATION'S REPROACH AGAINST ITS ANCESTORS

By RICHARD H. DOUNI BOERKER, Hanover, N. H.

O Forest! O divine inspiring creation!  
 Thou temple of the sylvan gods!  
 I love to visit thy secret dells  
 And hear thy birds' sweet melody.  
 I love the shade of the murmuring pines,  
 The fragrant zephyrs and cooling breezes,  
 And to sit by the side of the meandering brook,  
 As it babbles and warbles its melodious song.

O Forest! O divine inspiring creation!  
 Thou temple of the sylvan gods!  
 Within whose secluded haunts and glades  
 Played the wood-nymphs of ages past;  
 Thou, the home of primitive races;  
 Thou, inspiration to poets of all ages;  
 Indispensable to man and beast;  
 Thy time has come, thy race is run.

O Ancestors! Sons of an accursed race,  
 Desecrators of our leafy temples!  
 Within whose secluded haunts and glades  
 The wood nymphs never more shall play!  
 O Forest! once the home of primitive races;  
 Once the inspiration to poets of all ages;  
 Indispensable to man and beast;  
 O, grief! O, woe! thy race is run.

O Ancestors! Sons of an accursed race,  
 Who have left but desolation in your path!  
 Where are the birds, the murmuring pines,  
 The fragrant zephyrs, the babbling brooks?  
 Down the valley rushes the turbulent flood,  
 Over our land sweeps the fire of hell;  
 Grim Death is master: Desolation king.  
 O, grief, O, woe! 'Tis done, 'tis done.

# FOREST TREE NURSERIES

By Q. R. CRAFT

(Illustrations by Courtesy of Mr. G. W. Hill)

THAT the amount of forest planting done each year is increasing is evident from the uniform report of increased sales by the nurserymen. A nurseryman at Aitkin Minn., last year shipped four hundred thousand jack-pine seedlings to Nebraska alone. There are now nine Government nurseries where seedlings are grown for planting on the National Forests, twenty-one state nurseries, and 137 dealers in nursery stock, many of whom grow their own stock.

A great many planters are beginning to grow their own seedlings for planting, and shade screens, preventives for damping off, transplanting, and root pruning are becoming subjects of discussion.

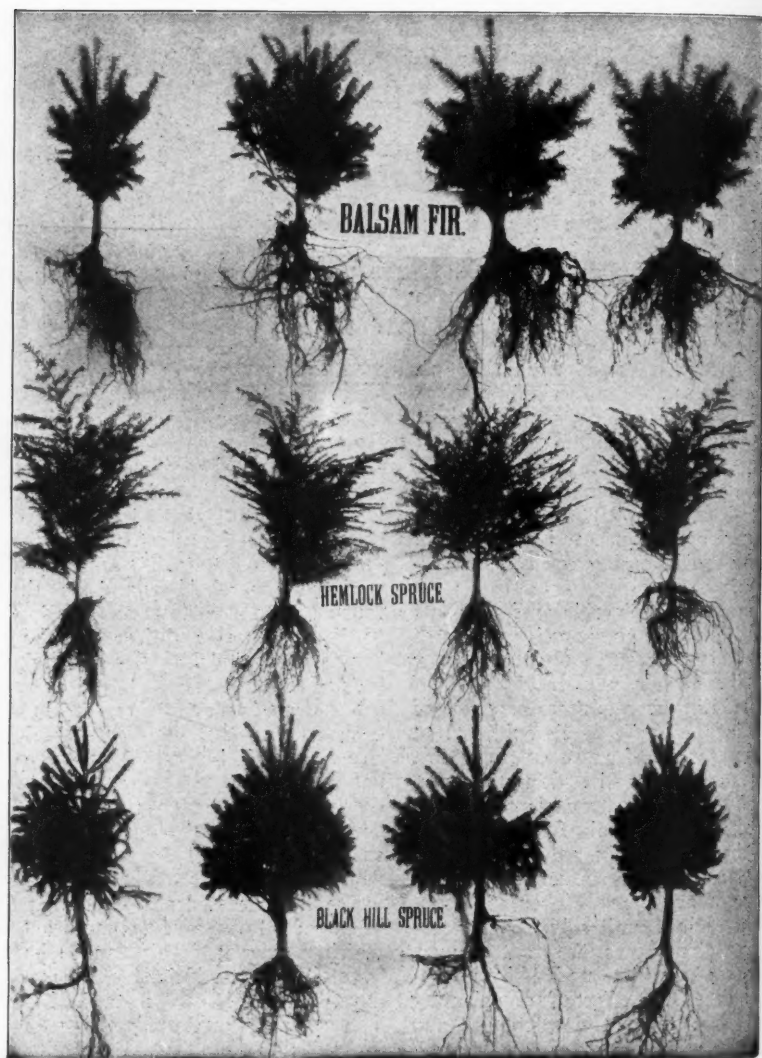
There is considerable difference of opinion as to the comparative merits of high and low screens, and though many favor the former, Mr. David Hill, of Dundee, Ill., after a thorough trial of both kinds, gives it as his opinion that low screens in frames of four feet square, are preferable. It is the practice of Mr. Hill to transplant all conifers when one year old from seed (except those of rapid-growing species, which are sold for special purposes at the age of one year). Then each subsequent spring, until sold, the trees in the transplant rows are root pruned, the pruner being set one-half inch deeper each time. The effect of transplanting is to stimulate root development and make the little trees stocky and hardy. The difference in the trees is noticeable in the accompanying illustrations.

With some nurserymen there is a question as to the advisability of root pruning because of the belief that injury to the root permanently interferes with its natural development, and that

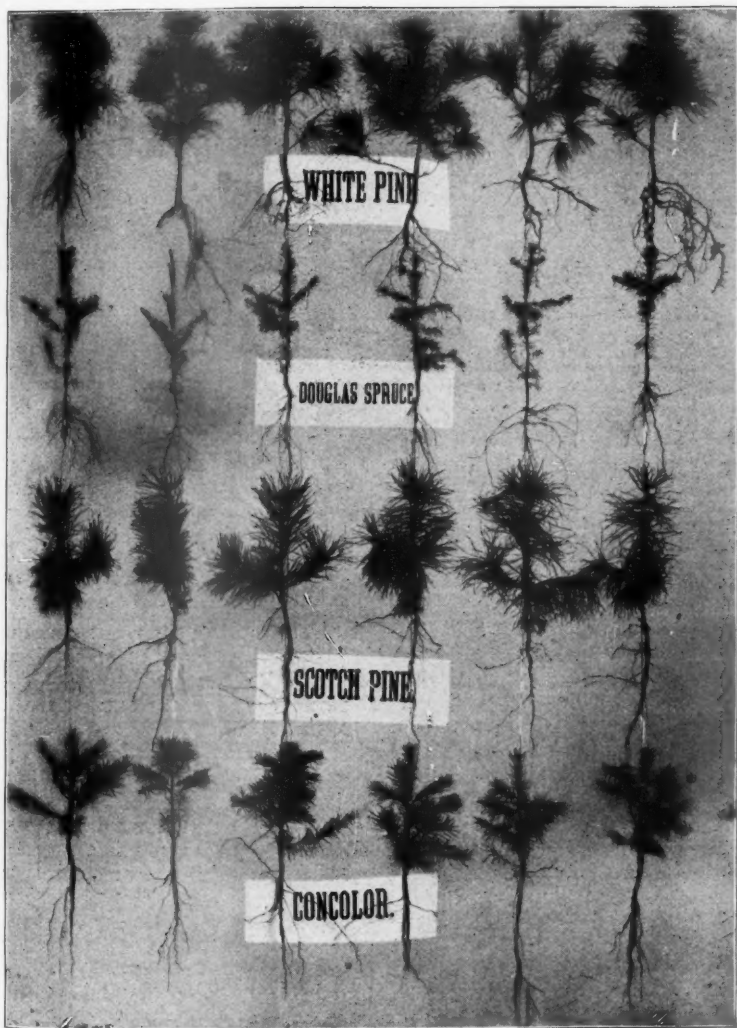
the wounds may invite the entrance of fungi and insects. In answer to an inquiry on this point, A. Knechtel, a New York state forester, writes: "We have done no root pruning of evergreens, but in transplanting hardwoods root pruning has resulted successfully." Concerning the nursery beds, Mr. Knechtel adds:

"The sandy soil is enriched by the free use of black muck and ashes. The nursery is provided with a water tank, from which leads a system of water pipes, so that the trees can be irrigated when necessary. A free use of seed gives fully stocked seed beds. For a bed twelve by four feet, we use three-fourths pound to one pound of pine seed, and one-half pound to three-fourths pound of spruce seed, according to the size of the seed. Damping off is hindered by making the beds with convex surface, and by using screens as a box around the bed instead of boards, so that the trees get a free circulation of air. But the trouble has not been entirely prevented. This year the trees damped off very considerably. The use of sand thoroughly dried and sprinkled on the beds on close, damp days, has helped somewhat. Next year we shall try heated powdered charcoal. We may also devise some means by which a current of air can be passed over the beds artificially on such close days. Burlap is used instead of leaves as a covering for the winter."

As Mr. Perley Spaulding writes, in Bulletin No. 4, just issued by the Bureau of Plant Industry, damping-off diseases are great obstacles to the successful production of tree seedlings. Mr. Spaulding conducted experiments first in the greenhouse and then in the field in the New York State nurseries at



Three and Four Year Old Transplants of Balsam, Hemlock, and White Spruce



One-year-old Seedlings of White Pine, Douglas Fir, Scotch Pine, and White Fir





European Larch on the Farm of Mr. D. Hill, at St. James, Minn.

Saranac Inn and the Vermont nursery at Burlington. The plots used were located in seed beds twelve feet long and four feet wide, each bed being divided into three equal parts, four feet square. The chemicals were used in fine powders, or in solutions, according to their original form and nature. The solutions were applied with an ordinary sprinkling can, while the powders were sifted on the beds with a very simple form of duster, having a perforated bottom, through which the powder was shaken. The solutions were applied to the soil before the seeds were sown, and then again about five days after the seedlings had come up. The powders were applied to the beds only after the seedlings had been up for three or four days. They were applied in very light coatings, which were renewed promptly after each rain. "This renewal," says Mr. Spaulding, "is not necessary except for a period of about two weeks, begin-

ning three or four days after germination, when the seedlings are most susceptible to the attacks of the damping-off fungi."

Sulphur was used in three forms, washed, resublimed, and precipitated; all of which gave favorable results, but the washed sulphur gave the best.

Dry Bordeaux Mixture was discarded because of the time required for its preparation. A mixture of one pound copper sulphate to ten pounds of lime, quickly prepared, proved equally effective. The lime should be slaked with as little water as possible, to obtain a fine powder. The powdered lime should be screened, and the ingredients thoroughly mixed.

Experiments with potassium sulphid and permanganate were devoid of results because of the absence of the disease from the plats treated. The use of formalin was disappointing.

The best results were obtained with



European Larch, Scotch Pine, Austrian Pine, and Black Walnut, Mr. D. Hill's Farm, St. James, Minn.



weak solutions of sulphuric acid—one part in five hundred is recommended. It should be applied several days before sowing the seed until the soil is thoroughly drenched, and the treatment repeated after the seedlings come up.

"Flats," or wooden trays, one foot by three feet in size, and three inches deep, with a hole bored in the bottom near either end, offer a threefold advantage to the farmer or other person who wishes to grow a limited number of seedlings:

(1) The trays can be pulled out from under the lath screen and placed where a person can work on either side of it in weeding, or, better still, placed on a box or stand, breast high. Thus the worker avoids the strain on the back in bending over seed beds four feet wide. It will also be practicable for the farmer, on rainy days, to take several flats into a shed or barn and weed them under cover. One season's trial indicates that by the use of flats, the pines can be grown without the protection of a screen, on the north side of a barn or other building, where they receive the sun during the early morning and the late afternoon.

(2) The work of uprooting and packing the seedlings is practically

eliminated. The root apparently attains as great a length in the flat as when it goes down into a seed bed a foot or eighteen inches, but it takes a lateral course a little before reaching the bottom of the flat, so that at the time of transplanting, all that is necessary is to soak the contents of the flat thoroughly and then scoop the seedlings out by double handfuls.

(3) In transplanting to the permanent site from a home nursery no packing is necessary, since the flats can be loaded into a lumber wagon, or if there are more than twenty, on a hayrack, and transported several miles in the hot sun without injury. But the chief advantage is that when the seedlings are old enough for transplanting they are ready, without further preparation, to be loaded for transportation to the field, and if the ground for the plantation is made ready in advance they can be transplanted by two men on a rainy day quickly and with a likelihood of the best success.

The flats are especially suited for school nurseries, where each pupil can have his own flat, and at the close of school take it home where adequate care can be given the trees during the rest of the year.

Table I—Location and operation of National Forest nurseries

Location	When established	Kinds of trees grown	Trees on hand June 30, 1907		Trees furnished previously for planting
			1-year transplants	2-year transplants	
Halsey, Nebr. ....	1902	Jack pine, western yellow pine.....	250,000	.....	241,500
San Bernardino, Cal.	1903	Jeffrey pine, Indian cedar, incense cedar, Coulter pine..	150,000	230,000	103,900
Palmer Lake, Colo. ....	1905	Douglas fir, western yellow pine, Engelmann spruce...	7,800	.....	.....
Ft. Bayard, N. M. ....	1905	Western yellow pine.....	89,800	23,000	40,500
Santa Barbara, Cal. ....	1905	Jeffrey pine, Indian cedar, incense cedar, Coulter pine eucalyptus.	127,000	18,500	59,000
Salt Lake City, Utah	1906	Western yellow pine, Douglas fir, Engelmann spruce, Scotch pine, Norway spruce, European larch.	119,000	.....	.....
Ft. Stanton, N. M. ....	1907	Western yellow pine, Engelmann spruce, Scotch pine, lamber pine, Douglas fir.	.....	.....	.....
Las Vegas, N. M. ....	1907	White fir, Douglas fir, western yellow pine, sugar pine, Jeffrey pine, Scotch pine, Austrian pine.	.....	.....	.....
Garden City, Kans. ....	1908	Black locust, honey locust, Russian mulberry, cottonwood, hackberry.	.....	.....	.....

Table II—Operations of some of the State forest nurseries

State	Location	Nurseries	Planting				Area of State forests
			Trees distributed in 1907	Trees planted in State forests	Total number of trees planted under direction of Forester	Young trees in nursery	
Connecticut	Union Tract, Tolland County	White pine	390,000	50,000	400,000	1,000,000	1,400
Hawaii	{ Nuuanu Station Tantalus Forest Honolulu	{ Ironwood, blue gum (eucalyptus), black wattle, silk oak.	20,100	.....	.....	30,000	397,657
Indiana	State Reservation, Henrysville, Clark County	Black locust, black walnut, catalpa, hickory.	.....	800,000	.....	300,000	2,000
Kansas	{ Dodge City Ogallah	{ Cottonwood, black locust, honey locust, silver maple, catalpa, ash, elm, Russian mulberry, Osage orange.	83,964	.....	.....	179,500	.....
Massachusetts	Amherst	White pine, white ash.	57,400	.....	.....	300,000	.....
Michigan	Rosecommon	White, red, and western yellow pine, Norway and red spruce.	65,000	150,000	650,000	2,000,000	39,000
Minnesota	Pillsbury Reserve, Itasca State Park	Norway spruce, white pine.	.....	.....	.....	.....	42,800
Mississippi	Agricultural College	Black locust, hickory, Osage orange, catalpa, southern pines.	.....	.....	26,000	50,000	.....
New Jersey	Bass River Reserve.	White pine	.....	30,000	75,000	25,000	9,867
New York	{ Saranac Inn Station State Fish Hatchery Wawheek Axton	{ White Scotch, red and western yellow pine, larch, spruce, hardwoods.	.....	450,000	2,633,100	1,674,750	1,548,450
Ohio	{ Wooster London Carpenter	{ Catalpa, ash, yellow poplar, white pine, black locust, Norway spruce.	123,046	.....	138,046	512,000	.....
Pennsylvania	{ Greenwood, Huntingdon Co. Asaph, Tioga Co. Mont Alto, Franklin Co.	{ White pine, Scotch pine, European larch, Norway spruce, balsam fir, hardwoods.	.....	.....	215,000	2,388,900	761,000
Vermont	Burlington	White pine	30,000	.....	30,000	350,000	.....

# FOREST TREE NURSERIES

379

Table III.—Trees for forest planting of which seeds and seedlings are sold by more than ten dealers in the United States, and the States in which the dealers are located

State	Number of Dealers	Hardy Catalpa	Box Elder	Black Locust	Silver Maple	Russ. Mulb.	White Ash	White Elm	Honey Locust	Scotch Pine	Black Walnut	Osage Orange	Cotton Wood	Arbutus	White Pine	Norway Spruce	Red Cedar	Eucalyptus	Black Cherry	Bass Wood	Sugar Maple	Ash, Pine	Hackberry	W. Yellow Pine	Green Ash	White Willow	Euro. Larch	Bur Oak	
California	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Colorado	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Connecticut	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Florida	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Georgia	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Illinois	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Indiana	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Iowa	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Kansas	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Kentucky	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Massachusetts	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Michigan	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Minnesota	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Missouri	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Nebraska	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
North Carolina	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
North Dakota	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
New Jersey	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
New York	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Ohio	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Oklahoma	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Oregon	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Pennsylvania	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
South Dakota	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Tennessee	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Texas	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Vermont	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Washington	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Wisconsin	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Wyoming	16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Number of States in which sold	27	20	17	18	15	15	14	14	12	12	12	8	7	12	11	11	14	5	12	11	9	9	10	10	7	4	4	6	5
Number of Dealers	137	44	41	38	33	32	30	28	25	21	20	18	17	17	16	16	16	15	13	13	12	12	11	11	9	8	6	6	

Besides the twenty-eight species given in the table, balsam fir is sold by fourteen dealers; white spruce by twelve dealers, Douglas fir by ten, yellow poplar (tulip-tree), blue spruce and Engelmann spruce by eight; white fir, coffee-tree, butternut, cucumber-tree, Norway poplar, sycamore, and red oak, by seven; redbud, incense cedar, pitch pine, and hemlock, by six; white birch, persimmon, beech, American holly, red sweet gum, tamarack, red spruce, sugar pine, and white oak by five; pine and scarlet oak by four; buckeye, Noble fir, lowland fir, sweet birch, chestnut, mockernut, common catalpa, pecan, red pine, loblolly pine, lodgepole, sweet magnolia, red mulberry, black spruce, silver pine, chestnut oak, and pin oak, by three; yellow birch, white cedar, shellbark hickory, western larch, short-leaf pine, Spanish oak, yellow (black) oak, redwood and big tree, by two; yellowwood, Port Orford cedar, shagbark hickory, black gum, balm of Gilead, and alperger elm, by one.

## THE NEW COMMISSION

### National Body Named by President Roosevelt to Take Up Work of Conservation of Natural Resources—Make-up of the Commission

**F**OLLOWING up the suggestion made at the recent Conference of the Governors, held at the White House in May, President Roosevelt has appointed a Commission, which is charged with the work of paving the way for the development of a comprehensive plan for the conservation of the Nation's natural resources. The title of the newly appointed body is "The Commission on the Conservation of Natural Resources;" it is organized in four sections, or divisions, embracing forests, waters, lands, and minerals, and its purpose is to make a thorough examination of the condition of these natural sources of wealth—to take an inventory, as it were—and then to work out a plan whereby the Nation, cooperating with the several states, may undertake the work of conserving and utilizing these resources to the best possible advantage, avoiding, on the one hand, wastefulness and rapid exhaustion, and on the other hand, niggardly methods such as, if adopted, would clog the development of commercial enterprises in so far as concerns the forests, the waterways, the farms, and the mines.

The President's letter appointing the Commission was made public on June 8. In this letter the President goes deeply into the reasons behind the organization of the Commission. He details the various steps that have led up to the organization of a National body that is to formulate plans for a Nationwide system of rehabilitation of all natural sources of wealth, and names the men whom he has selected to undertake this tremendous task. The President's official announcement is here given in full:

#### The White House

Washington, June 8, 1908.

The recent conference of Governors in the White House confirmed and strength-

ened in the minds of our people the conviction that our natural resources are being consumed, wasted, and destroyed at a rate which threatens them with exhaustion. It was demonstrated that the inevitable result of our present course toward these resources, if we should persist in following it, would ultimately be the impoverishment of our people. The Governors present adopted unanimously a declaration reciting the necessity for a more careful conservation of the foundations of our national prosperity, and recommending a more effective cooperation to this end among the states and between the states and the Nation. A copy of this declaration is enclosed.

One of the most useful among the many useful recommendations in the admirable declaration of the Governors relates to the creation of state commissions on the conservation of resources, to cooperate with a Federal commission. This action of the Governors cannot be disregarded. It is obviously the duty of the Federal Government to accept this invitation to cooperate with the states in order to conserve the natural resources of our whole country. It is no less clearly the duty of the President to lay before the Federal Congress information as to the state of the Union in relation to the natural resources, and to recommend to their consideration such measures as he shall judge necessary and expedient. In order to make such recommendations the President must procure the necessary information. Accordingly, I have decided to appoint a commission to inquire into and advise me as to the condition of our natural resources, and to cooperate with other bodies created for a similar purpose by the states.

The Inland Waterways Commission, appointed March 14, 1907, which suggested the Conference of Governors, was asked to consider the other natural resources related to our inland waterways, and it has done so. But the two subjects together have grown too large to be dealt with by the original body. The creation of a commission on the conservation of natural resources will thus promote the special work for which the Inland Waterways Commission was created, and for which it has just been continued and enlarged, by enabling it to concentrate on its principal task.

The Commission on the Conservation of Natural Resources will be organized in four sections to consider the four great

classes of water resources, forest resources, resources of the land, and mineral resources. I am asking the members of the Inland Waterways Commission to form the Section of Waters of the National Conservation Commission. In view of the lateness of the season and the difficulty of assembling the members of the sections at this time, a chairman and a secretary for each section have been designated, and the chairmen and secretaries of the sections will act as the executive committee, with a chairman who will also be chairman of the entire Commission. I earnestly hope that you will consent to act as a member of the Commission, in common with the following gentlemen:

## WATERS

Hon. Theodore E. Burton, Ohio, chairman.  
 Senator William B. Allison, Iowa.  
 Senator Francis G. Newlands, Nevada.  
 Senator William Warner, Missouri.  
 Senator John H. Bankhead, Alabama.  
 Mr. W J McGee, Bureau of Soils, secretary.  
 Mr. F. H. Newell, Reclamation Service.  
 Mr. Gifford Pinchot, Forest Service.  
 Mr. Herbert Knox Smith, Bureau of Corporations.  
 Hon. Joseph E. Ransdell, Louisiana.  
 Prof. George F. Swain, Institute of Technology, Massachusetts.  
 The chief of engineers, U. S. Army.

## FORESTS

Senator Reed Smoot, Utah, chairman.  
 Senator Albert J. Beveridge, Indiana.  
 Senator Charles A. Culberson, Texas.  
 Hon. Charles F. Scott, Kansas.  
 Hon. Champ Clark, Missouri.  
 Prof. I. C. White, State Geologist, West Virginia.  
 Prof. Henry S. Graves, Yale Forest School, Connecticut.  
 Mr. William Irvine, Wisconsin.  
 Ex-Governor Newton C. Blanchard, Louisiana.  
 Mr. Charles L. Pack, New Jersey.  
 Mr. Gustav Schwab, National Council of Commerce, New York.  
 Mr. Overton W. Price, Forest Service, secretary.

## LANDS

Senator Knute Nelson, Minnesota, chairman.  
 Senator Francis E. Warren, Wyoming.  
 Hon. John Sharp Williams, Mississippi.  
 Hon. Swagar Sherley, Kentucky.  
 Hon. Herbert Parsons, New York.  
 Ex-Governor N. B. Broward, Florida.  
 Mr. James J. Hill, Minnesota.  
 Ex-Governor George C. Pardee, California.  
 Mr. Charles McDonald, Am. Society of Civil Engineers, New York.  
 Mr. Murdo Mackenzie, Colorado.

Mr. Frank C. Goudy, Colorado.  
 Mr. George W. Woodruff, Interior Department, secretary.

## MINERALS

Hon. John Dalzell, Pennsylvania, chairman.  
 Senator Joseph M. Dixon, Montana.  
 Senator Frank P. Flint, California.  
 Senator Lee S. Overman, North Carolina.  
 Hon. Philo Hall, South Dakota.  
 Hon. James L. Slayden, Texas.  
 Mr. Andrew Carnegie, New York.  
 Prof. Charles R. Van Hise, Wisconsin.  
 Mr. John Mitchell, Illinois.  
 Mr. John Hays Hammond, Massachusetts.  
 Dr. Irving Fisher, Yale University, Conn.  
 Mr. Joseph A. Holmes, Geological Survey, secretary.

## EXECUTIVE COMMITTEE

Mr. Gifford Pinchot, chairman.  
 Hon. Theodore E. Burton.  
 Senator Reed Smoot.  
 Senator Knute Nelson.  
 Hon. John Dalzell.  
 Mr. W J McGee.  
 Mr. Overton W. Price.  
 Mr. G. W. Woodruff.  
 Mr. Joseph A. Holmes.

One of the principal objects of the Federal Commission on the Conservation of Natural Resources will be to cooperate with corresponding commissions or other agencies appointed on behalf of the states, and it is hoped that the Governors and their appointees will join with the Federal Commission in working out and developing a plan whereby the needs of the nation as a whole and of each state and territory may be equitably met.

The work of the Commission should be conditioned upon keeping ever in mind the great fact that the life of the nation depends absolutely on the material resources, which have already made the Nation great. Our object is to conserve the foundations of our prosperity. We intend to use these resources; but so to use them as to conserve them. No effort should be made to limit the wise and proper development and application of these resources; every effort should be made to prevent destruction, to reduce waste, and to distribute the enjoyment of our natural wealth in such a way as to promote the greatest good of the greatest number for the longest time.

The Commission must keep in mind the further fact that all the natural resources are so related that their use may be, and should be, coordinated. Thus, the development of water transportation, which requires less iron and less coal than rail transportation, will reduce the draft on mineral resources; the judicious development of forests will not only supply fuel and structural material

but increase the navigability of streams, and so promote water transportation; and the control of streams will reduce soil erosion, and permit American farms to increase in fertility and productiveness and so continue to feed the country and maintain a healthy and beneficial foreign commerce. The proper coordination of the use of our resources is a prime requisite for continued national prosperity.

The recent Conference of the Governors, of the men who are the direct sponsors for the well-being of the states, was notable in many respects; in none more than in this, that the dignity, the autonomy, and yet the interdependence and mutual dependence of the several states were all emphasized and brought into clear relief, as rarely before in our history. There is no break between the interests of state and nation; these interests are essentially one. Hearty cooperation between the state and the national agencies is essential to the permanent welfare of the people. You, on behalf of the Federal Government, will do your part to bring about this cooperation.

In order to make available to the National Conservation Commission all the information and assistance which it may desire from the Federal Departments, I shall issue an executive order directing them to give such help as the Commission may need.

The next session of Congress will end on March 4, 1909. Accordingly, I should be glad to have at least a preliminary report from the Commission not later than January 1, of next year.

(Signed) THEODORE ROOSEVELT.

Commenting on the appointment of this Commission, the *Washington Post* says, editorially, in its issue of June 9:

The President has found a way to carry on the conservation movement without waiting for an indifferent, if not a hostile, Congress to make an appropriation. He has reorganized the Inland Waterways Commission and added to it several important men, including Senator Allison and Representative Ransdell, of Louisiana. He has also appointed a Conservation Commission, consisting of the Waterways Commission and three other bodies, having jurisdiction over forestry, land, and mineral questions. The chairman of this combined commission is Gifford Pinchot, the leading spirit of the conservation movement—the right man in the right place.

It is now in order for the Governors of the states to appoint commissions, which, in their respective spheres, will cooperate with the national commission. The latter will doubtless hold sessions during the summer in various sections of the country, preparing for the long campaign of education that must be conducted if the conservation plan in its fullness is to become a settled policy of the people and of Congress. This campaign can be strongly aided by the state commissions, with their intimate knowledge of local conditions.

One of the first practical obstacles to confront the conservation commission, probably, will be the tendency of Congress to cling to the old manner of doling out appropriations for internal improvements and the old method of making them. At the next session a river and harbor bill will be demanded. The biennial distribution of this peculiarly juicy pork will be the cause of special solicitude on the part of Congressmen anxious to be reelected. It has been proved clearly enough to honest men that the huge expenditures on rivers and harbors are not wisely placed or efficiently used. The money does not go where commerce calls it, nor is it used with thrift and foresight. The army engineers, under whose jurisdiction the money is dumped into the creeks and bayous of the country, do not take a real interest in this part of their work. They perform it honestly, but in too many cases they are only too well aware of the fact that log-rolling in Congress secured the appropriation for projects that should not be undertaken. Many of the projects are reluctantly approved by them, or actually disapproved. They know that these projects are not designed for the public welfare, but merely to obtain money from the Treasury for a certain locality, in competition with other localities. It is not surprising that the engineers take little interest in this country-wide game of grab.

If the Conservation Commission can impress upon the minds of the people that the river and harbor bill is a costly extravagance, it will have laid the foundation for the greater work of internal improvements which will be of actual benefit. When the voters of a Congressional district forego the temptation to secure a big river and harbor appropriation for the sake of contributing to bigger and broader plans for utilizing all the water, land, forest, and mineral resources of their region, the work of the conservation commission will be more than half done.





# WORK IN A NATIONAL FOREST

## No. 8. The Everyday Ranger

By CHARLES HOWARD SHINN

I HAVE been reading a book written by a man whom I remember, years ago, when he was a short, stubborn, auburn-haired mountain boy, who came to the preparatory department of the newly established University of California. He is now a professor of philosophy—never mind where. In this book he explains with convincing clearness what seem to me the essentially right relations of a man to himself, to his cause, to humanity, and to the universe.

This book sums it all up in the word loyalty, as ultimately defined by him to mean that which says to a man: "The best that you can get lies in self-surrender and in your personal assurance that the cause to which you surrender yourself is indeed good. But your cause, if it is indeed a reality, has a good about it which no one man and no mere collection of men can ever verify. This good of the cause is essentially superhuman in its type, even while it is human in its embodiment, for it belongs to an union of men. to a whole of human life which transcends the individuality of any man, and which is not to be found as something belonging to any mere collection of men. Let your supreme good, then, be this: That you regard the cause as real, as good, and that if the cause be lost to any merely human sight, you hold it to be nevertheless living in its own realm—not apart, indeed, from human life, but in the form of the fulfillment of many human lives in one."

Again, he sums it up: "Loyalty is the will to manifest, so far as is possible, the Eternal, that is, the conscious and superhuman unity of life, in the form of the acts of an individual self." Or, as

still more plainly stated by Professor Royce, whose book I heartily commend to all the thinkers in the Forest Service: "Loyalty is the will to believe in something eternal, and to express that belief in the practical life of a human being."

And how is all this related to the plain forest rangers and guards—the men behind the guns? They will not read this philosophy; they will not follow any of the age-old discussions about success, expediency, truth. No! But like the old rover in Stevenson's fable, they will seize their axes and run joyously to die with Odin.

I must admit that long before the "philosophy of loyalty" was made the subject of a book, I tried faithfully to put some such ideas into the minds of rangers—until I found that they were there already, and that their loyalty to the large and growing ideals of a great cause were teaching me much more than I could ever hope to teach them. They were finding out for themselves that "it is better to be a spoke in a wheel than a spoke out of a wheel." They had not become rangers for the pleasure of it, nor for the worldly success, but because, having sworn allegiance, they had "neither eyes to see nor ears to hear," save as the Forest Service commands. But they cannot talk much about it (and how very fortunate that is). I can imagine just what some grizzled old ranger says at the campfire a week after one of our Saturday night meetings:

"The boss gave us a string about loyalty; said to play this game for all there is in it. 'Taint decent to do nothin' else."

I look back to 1902, when I came



into this work. Then we hardly had more than two kinds of rangers—local men, full of local prejudices, who would strain every nerve to take care of their old neighbors; and men from a distance who would cheerfully trample upon all the local customs and usages. One of the first class of rangers used to tell men who wanted posts or shakes or anything else out of the forest, "Go right along, and take what you need; never mind any record; it's a pity if I can't help you out—there's lots left."

In another case the ranger used to tell cattle men (this in the days of free grazing permits): "I don't mind if you run over the number you asked for; drift 'em right in."

This doesn't mean that these rangers were consciously lazy or dishonest; they simply belonged to the neighborhood and they wanted everybody to have a good time.

On the other hand, there was once a ranger whose first announcement when he reached his district was to this effect: "Everything has been too slack here; these mountain people must obey the regulations; office hours are Saturday afternoons, at my cabin." Thence arose the historic statement of an old Sierra mountaineer: "That dude from Santa Cruz told me not to spit on any piece of Government land without a permit from Washington."

Came into the Service, because of the loyalty of a great multitude, that leaven which leaveneth the whole mass; came a something which has made man after man of the "old guard" of our forests more than willing to seek, through toil and travail of spirit, the highest permanent good of the local communities which they love and of which they are truly a vital part.

In these days our rangers say to those who criticise us: "We know just how you feel; we are plain folks ourselves. But we are very sure that the Service is right. Just wait a little, and try to believe that this thing is coming out in the best way for all of you. Help us fellows to make the Forest a real benefit to everybody."

The outsider, too, the "man from

Santa Cruz," comes in with burning zeal to learn the local needs first of all. He learns to "carry his office under his hat," without disregarding the official side of life. So, little by little, the real men have begun to move together in harmony with the work. Their thoughts rise from "our district" to "our Forest," and then to "our Service." They do not pause there; they become a living part of national issues and fearlessly climb into great spaces among the stars of heaven. The noble cause becomes only one of many noble causes and the end of all is the same—the following of the eternal verities, not for gain, nor honor, nor happiness, but in absolute self-surrender for the sake of that which is.

Because I have found all this in the daily life of guards and rangers to whom my philosophies of life are as Greek, they have taught me more than my favorite books (which for the most part merely restate in some delightful way what one already knows). We began together long ago—rangers and head-ranger—when "a dollar looked as big as a cart-wheel" and if a ranger had one to spare, he lent it along the line, till, three months later, some veteran away up in the blue peaks would suddenly remark: "Here's that dollar you lent Harry, an' Harry lent to Jo, an' Jo lent to that new feller down in the canyon, an' some more I don't remember passed it up, an' that's your dollar. Came in handy, too."

At present many of the rangers have little bank accounts, and they buy better horses and saddles, but the comradeship of the old time remains, and it deepens and broadens with the years. We are learning to pass ideas down the line even more freely than we did those cartwheel dollars.

A ranger is not a man whom you can easily put into a book or story anywhere away from his own country. He is one who has come into the Service for the hope and promise of it, and has staid for the sheer love of it. He learns to bless his lucky stars that the fates led his feet into this path. But nevertheless he finds the Service hard, not in

a low sense, but in a high one; it crowds him constantly toward more care, more "business sense," more knowledge of all sorts of new things. Once, when he was young, the ranger liked to fish—he very seldom gets fishing any more; he even shows the best fishing places to the tourists, and goes off about his business!

Two young rangers lately said to me: "Saturday is a legal holiday, but maybe this piece of work should be finished quick, and if you say so, we won't mind putting in Saturday and Sunday before we move camp."

"But you'd like to take your wives and go back to Chiquito and see the snow peaks and get an inspiration there—and take some trout flies."

"You bet we would!"

I love to note how the real rangers of a Forest wear themselves thin and gray every summer. They come and go, eager-eyed, quiet, giving of their best, responding to every call, though it come at night, though it "kills a horse," or "breaks a few ribs," and by the time the first rains come they are the sort of men whom you do not insult by any gush over their heroism. Instead, you sass them extra hard; you tell them that they sleep too much and eat too often. I was at a fire once where grub was very scarce. We divided up the hard-tack, and labelled each pile "beans," "beef-steak," etc. Said one ranger, with a meditative drawl: "I seen a man eating bacon 'bout a month ago. Anyhow he *said* it was bacon!"

Into such a land of perennial youthfulness the youngster comes, and, if he has any future value, is soon swept out of himself by its vast currents. If not, he shudders and so escapes, with terror in his soul, and with a wild pursuing laughter behind him.

"I never supposed that a ranger had to cut brush and grub stumps and build fence and work like a nigger," said one of the "greenies." "I thought he just rode around under the trees and made outsiders toe the mark."

He was a new guard, on trial; he said this in camp to a group of old boys with whom he had been working. They

were sorry all over for him; they looked at him, solemn-eyed, and regretted the cruelties of the Service. "The boss," they said, "just sticks it on us all the time. We are workin' like slaves—guards an' rangers an' everybody. It's plumb wicked the way we're herded here!"

The new hand felt comforted, and he ambled innocently on: "That heavy brush tears my clothes, and my back aches, and I burned a shoe, and my socks are full of stickers. Then I fell on the barbed wire when I was stretching it, and cut my nose. I tell you what it is, fellows; if the Lord is good to me, I hope I'll never see another inch of barbed wire as long as I live. If I was only back in Peanutville, where I used to live, I could be eating a plate of ice cream this minute instead of working like a dog and having to wash my own clothes Sundays when I might be hearing the band play in the park."

"Too bad! Too bad! Too bad!" said all the old rangers in chorus, and so it went on till shouts of laughter began to fill that mountain camp and the indignant youngster suddenly understood that his point of view had somehow no sympathy.

But the next day one of the most effective of the rangers in the district asked him as they went up the trail together, "How much of that stuff you was preachin' last night did you mean? Of course this is hard work; it has to be. Either leave it mighty pronto, or wrestle with it till you're a man at the game. I've seen lots of young fellows harden up—some of the best of them came in just as green an' useless as you are. Don't you know you hold us back and waste our time, too, on most any job? But it's the price we have to pay up here to get new men started. I heard the boss say once that a real seasoned ranger that had crossed the line was worth his weight in raw diamonds."

"Crossed the line?" said the youngster, "What do you mean by that?"

"Well, the boss says that when a fellow isn't workin' for the pay, or for promotion, and is puttin' in all there is in him, and is married to the work, and

his wife is just as bad as he is, then he has crossed the line into new oceans, under new skies, and has found the real thing. Sounds like poetry, but the boss says it isn't. He says that the idea behind it is just as big and as real as a sugar pine."

The youngster was provoked. "I think that all of you are crazy!" He walked into the supervisor's office that afternoon and explained that the work was unsuited to a person of his attainments. He never knew exactly how it happened, but he signed a resignation blank almost before he knew it, and went back to Peauntville.

The rangers followed his career for several years with joyous interest. He clerked, he took money at a circus window, he tried newspaper work, he went to the mines, he was everything by turns, but nothing long. But still one sometimes hears a ranger say to another while they are fighting fire together down in some hot gulch: "Say, Jack, I wish I had a plate of ice cream." And Jack responds: "I wish I could sit in the Peauntville park and hear the band play."

Thus the miserable failure of this youth has come to be used by loyal men to the betterment of the Service; not of set purpose, but none the less surely has it become mortar in the walls of the Temple.

Inspectors tell me sometimes that the rangers are different in, say, Oregon, from those in New Mexico. I cannot think that they are essentially different. I think that when the Chief goes around, he sees the essential unities, not the minor differences; he sees that the

Service is a spiritual force that lifts men out of themselves, and makes them living "spokes in the wheel," living wheels in a living engine. He sees men finding themselves, then giving themselves, not to him as leader, but to a Service. And it is not always the strong, the refined, the highly educated who achieve the most complete loyalty to something far greater than themselves. The Chief sees, I think, that whoever, great or small, high or low, from guard to head of division, who holds back anything of himself in either body or soul is not wholly loyal to the Service. And, knowing this, his heart especially goes out—not to me who write of these things, not to any of those who rule as best they may, from the seats of the mighty, but to the rank and file; to the plain Americans, so simple, so in earnest, so troubled about their forms, their reports, their maps; even so much more anxious about Bane's hogs, the shakes for old man Castro's cabin, and those miners up in Tamarack Gulch.

For the Service grows according to the degree in which it inspires the plain everyday people. It not only goes on with increasing energy, but some of its force passes forever into the shaping of greater human issues than even waters and forests. For these, our loved guards and rangers and their wives and children are learning to think and to act more and more helpfully for the betterment of the communities in which they live. To this the communities are learning to respond in like measure. There we can safely leave it.



## EDITORIAL

### The Conservation Commission

FOLLOWING closely upon the memorable Conference of the Governors, at the White House in Washington, comes the announcement by President Roosevelt of the appointment of a Commission on the Conservation of Natural Resources. In another part of this issue of FORESTRY AND IRRIGATION will be found the President's letter of appointment, together with the list of members of the new Commission.

America—or, to speak more definitely, the United States—has long been known among the nations as a nation of extravagance. Nationally and individually, wastefulness has been a leading characteristic; and, when one comes to think of it, this is a peculiar fact. Descended as we are, from the careful peoples of the Old World, our blood a blending of the blood of Puritans, of Scotch, Irish, English, French, German, Swede, Dutch, and all the other blood-lines of the continent of Europe, it is strange that we should have—and should have earned—such a characterization. Ancestrally we are a saving people; a frugal, even a parsimonious, people; but actually, we are the most improvident—the spendthrift among nations.

It is interesting to trace the development of this spirit of wastefulness—this idea of taking absolutely no heed for the morrow. Coming as we do from races whose every tendency, whose whole training, has been in exactly the opposite direction, it is a wonderful thing to consider that within a single generation the effects of all racial tendency toward thrift is lost—to consider that within much less than the lifetime of an individual we, as a people—of blood amalgamated of every thrifty, frugal race if Europe—have gone as far toward wastefulness as did

our ancestors, through hundreds of years, toward niggardliness.

The very abundance of natural wealth with which America has been endowed is the basic cause of this departure from type. When those frugal ancestors of ours reached the shores of the North American continent they found a land wherein nature had lavished every form of potential wealth she possessed. They found forests of such magnitude and magnificence as to be beyond comparison, so far as their previous experience had reached. They found mines, rivers, soils of such fertility as to astound them; and by the time their children succeeded them, the habit of regarding these resources as inexhaustible had become fixed. Trees and forests existed only to be cleared away, cut down and destroyed to make room for farms; soils were so rich that no idea of conservation or renewal of fertility ever entered their heads; water-powers were so abundant that they were unworthy of mention or of serious consideration. So the forests of the East were destroyed; those of the Middle West went in like manner—deadened, cut down, and burned, in vast holocausts. When, at last, the fertile farms of the East began to lose their fecundity, there was plenty of land left in other regions and the young men were advised to “go West, and grow up with the country.” The Nation gave to every man asking for it one hundred sixty acres of as good land as ever lay outdoors; all that was necessary, in order to possess it, was sufficient money to make the trip and pay the trivial fees required.

The vast hardwood forests of the Middle West followed those of the East, going the way of destruction without a hand being raised to prevent. Wood, for fuel, went out of use when

coal began to be mined, and in large sections of the country, natural gas supplanted coal. In the use of all these—wood, coal, and gas—the same spirit of criminal wastefulness prevailed, and now the evil results are becoming manifest. Indeed, to thinking, seeing men, these results have been apparent for years. Who among those who read this ever use wood as fuel, excepting it be while on a camping or vacation trip? But turn your mind's eye back a few years; think of the time when you, reader, lived at home with father and mother, perhaps on the old farm. What was the fuel then? Wood, most likely burned in the old-fashioned fireplace, in the form of great logs. Later came coal, and the grates, coal stoves, and "base burners." Then, for those of you who live west of the Alleghanies and east of the Mississippi, came the gas. Now, you have gone back to coal again. You haven't wood any longer; you wasted the gas, of which there was enough, had it been properly used, to last five hundred years, and now you are burning coal. Two of your candles are gone, and you are burning the third at both ends.

The days when our rivers and waterways were crowded with a vast and ceaselessly busy traffic are well within the memory of living men. Shrunken as it is to a small fraction of its former magnitude, the inland water traffic of the United States is still magnificent. But American heedlessness, American wastefulness, American carelessness has brought this water traffic to its present pitiable state—pitiable as compared to its former immensity. Hill-sides ravished with ax and saw and fire, laid bare to the storms and the floods, have vomited their soil into the rivers, there to form bars and shallows that turn former water-highways into successions of pools. Low water, in the Ohio and the Mississippi, the Wabash and the Kanawha, and all the other rivers of the Middle West—to say nothing of those farther east or farther west—lasts now from May to December; the rest of the year the rivers are raging floods, that each year devour more and

more of the land and take a larger and still larger toll of human life and man-made wealth. And it is all our fault; it is all because we Americans have not seen, and will not see, the folly of the course we are following.

Men of science tell us that the coal in our mines is approaching exhaustion, and that a very few hundred years will see the end of the supply. Wasteful methods of mining, wastefulness in consumption, go on unchecked—absolutely unheeded. Who cares? If we lose, in power production, ninety per cent. of our coal, why worry? There will be plenty for us, and "after us, the deluge." Let those who follow us warm themselves by the rays of the sun; let our descendants invent sun motors for transportation and power purposes; we shall not be here to suffer, and if the children of our children are made miserable, we shall not know it. There is your American spirit—a spirit as far from altruism as is the North Pole from the South.

But now this orgy of destruction, this saturnalia of extravagance, is to be ended. The whisperings of a new National policy have been running through the land for years, and at last these whisperings are growing more distinct. A few years ago they began to take definite form—to become coherent and audible, and then we set about preserving, as best we could, the forests that remained to us. Then they grew louder, and the Inland Waterways Commission was born. The fuller note was heard in the Conference of the Governors; and now comes the deep-lunged challenge to the Spirit of Unthrift in the appointment of the Commission for the Conservation of Natural Resources. A new commandment has been given unto the American people, and it is this: "Thou shalt not waste the lands nor the resources that the Lord has given thee."

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"United We Stand"

**A**MONG the most noticeable features of the White House Conference was the idea, often repeated, that no



section of the country should, or can, regard its interests as paramount; that the interests of one section are the interests of all, and that a recognition of this principle is coming and must come if the Nation is to work out the fullest measure of material and spiritual prosperity. Another distinctive note was struck when it was declared that, among the Nation's resources must be counted its scenic beauties. No part of the country, it was declared, has a right to advance its own interests, be they financial or otherwise, at the cost of destroying the beauty of any other section. No section, indeed, has a right to advance its own interests at the cost of destroying its own attractiveness. Pennsylvania has no right to make itself wealthy by turning its hills into honey-combed rabbit-warrens, and its valleys into slag-heaps. Buffalo has no right to make itself wealthy by turning Niagara into a bare, dry precipice, hardly moistened by a few trickling rivulets that have escaped the tunnels of the power plants; and Chicago has no right to build up for herself an inland water commerce by turning back the tide of the Lakes and leaving the harbors of Detroit, Toledo, and other Lake cities without water. The people of the West have no right to ravish their forests as those of the East have already been ravished. The country has learned a lesson from the experience of the East, and it will not permit a repetition of that experience in the only section of the land where forests of any extent remain.

In this connection, the following editorial expression from the Providence, R. I., *Journal*, is expressive of the sane sentiment of the country as regards conservation, and is a just estimate of the importance of the newly-appointed Commission on the Conservation of Natural Resources.

"The estimates of the International Waterways Commission, composed of an American and a Canadian section, as reported to the Parliament at Ottawa, do not threaten obstacles to the development of the Chicago drainage Canal into a navigable stream. This will relieve the fear which has been ex-

pressed on behalf of ports, other than Chicago, on the Great Lakes. It is believed that with a diversion of water to the quantity of ten thousand feet a second Chicago's sanitary necessities will be met for all time, and the largest practicable waterway created; while the lowering of the surface of the Lakes will be only from four to six inches, which will create no embarrassment to traffic thereon. The Government of the United States will be urged to prohibit a greater diversion for the canal. For power purposes, with the preservation of the scenic beauties of Niagara Falls the chief consideration, the joint commission also proposes maximum figures, declaring that 'it would be a sacrifice' to grant privileges beyond the estimates.

"The omission to provide in the Agricultural bill, or elsewhere, for a continuation of the Joint Congressional Commission on Inland Waterways will not be permitted to embarrass the development of the series of enterprises combined in the policy of conservation of natural resources to which the President and the country have set their faces. This neglect on the part of Congress, together with the failure of the Appalachian Bill, reflected in a picaresque fashion an opposition, not necessarily to the policy in the abstract, but to details of it which threaten special interests, or are disagreed to by certain local constituencies. Especially have the Mississippi River boomers of the Centre been restless against the broad and conservative program outlined by the Waterways Commission. They are disinclined to have their half-billion dollar scheme delayed for incorporation with like enterprises to constitute and give a genuinely national scope to a single magnificent policy. After careful assimilation of all considerations the President took his stand with the Commission and announced his views in his first message to the Sixtieth Congress. From that hour the Commission has been made uncomfortable. Though not too rashly antagonistic on the floor, Congress was able, with an affectation of contempt that itself was contemptible, to display its feelings by cutting out the sustaining appropriation and all mention of the Commission from its enactments.

"The summons to the Governors for the May conference was undoubtedly a strategic move in respect to this move in Congress, as well as broadly reflecting a purpose to enlist state cooperation for the furtherance of the general policy. That the meeting of the 'House of Governors' aroused a measure of jealousy in the Congressional bosom was made manifest. That the President regarded the situation as precarious and anticipated the action in repudiation of the Inland Waterways Commission was shown by his declaration that he would personally see to it that the Commission was not wiped out of existence. He has made good that pledge by requesting the members of the Commis-

sion to consider themselves as still employed in the service of the Government. Brigadier General Mackenzie, Chief of Engineers of the Army, passes to the retired list, but his successor in the War Department will succeed him, ex-officio, on the board, while Senator Allison, Congressman Ransdell, of Louisiana; Doctor McGee, the Government's chief anthropologist, and Prof. George T. Swain, of the Massachusetts Institute of Technology, are added members. Moreover, the President has given greater consequence to the Commission and prepared for the amplification of its investigations by appointing and associating with it other boards on the collateral projects, forests, lands, and minerals; the quartet constituting the main sections of what will now be known as the National Conservation Commission."

Conservation is a National duty, and we, as a people, shall fail utterly to take advantage of our opportunities if we do not grasp in its fullness this idea.

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#### Mountain Forests and Floods

A WRITER in the *Pacific Sportsman* discusses the subject of mountain forests and floods. He understands that forestry advocates hold that the one grand object in maintaining forests on mountain slopes is to "cause the snow to melt slowly," and thus "preserve the water supply." The position that mountain forests do subserve these ends, he then proceeds to demolish as follows:

1. "The timber has nothing to do with the water supply, but is a result of the water supply.

2. "On the contrary, the trees are a detriment, because they absorb a heap of water after it gets down to them from the peaks. Trees in the mountains make floods in the spring.

3. "Snow in the timber melts too fast. The timber keeps it from drifting. The snow that falls below the timber line is a positive danger rather than a blessing, for the timber shades it until the warm air of spring melts it with a rush, and spring floods result.

4. "The agency which maintains the rivers is the snow in the huge snow drifts above timber line. In the high, sharp valleys of the peaks and pinnacles there are basins, steep rocky sides of cliffs, barren spires, smooth hillsides

where the wind blows like all possessed when a storm comes. Winter snows fall deeper and oftener here than they do in the timber below. The wind blows the snow off the hillsides and piles it into huge drifts in the basins; then the warm winds come, and the rest of the snow on the hillsides above the basin loosens up and comes sliding down into the basin too, tons and tons of it, until the basin is a basin no longer but an enormous snow bank containing acres of surface and anywhere from ten to one hundred feet deep—mostly on the north and northeast side of the mountain proper and away above timber line, where the air is always cool and where the peak shades the snow bank for a good part of the day. That's your reservoir that feeds the living streams of summertime.

5. "As for forest reserves, what we should do is to reserve the mountains above timber line from settlement, so the thousands of big snow-filled basins will not be polluted, and tree planting should be carried on in the plains country where trees are needed for fuel, lumber, and the influence they exert on the hot atmosphere of Kansas and Texas to induce rainfall."

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#### By Way of Reply

IN THE first place, forestry people do not hold that the one grand object in maintaining forests on the mountain slopes is "to cause the snow to melt slowly" and thus "preserve the water supply." They lay much stress upon one factor wholly ignored by the unknown writer, viz.: the rain which falls upon mountain slopes. They show that rain falling upon a densely forested slope has its force broken by the forest cover, its erosive power thus being reduced; that, up to the point of saturation, it is absorbed by the forest mulch, passed into the underground circulation and released slowly during the succeeding days, weeks, or even longer periods through mountain springs, gradually to feed the streams, maintain an equable flow, and serve the ends of



agriculture, navigation, and manufacture. They show, on the other hand, that the same rain falling upon a slope bared by ax and fire rushes madly to the bottom, sweeping the slope bare of soil, silt, and everything movable, fills the channels of the streams with debris, and produces disastrous floods, to be followed by droughts hurtful to agriculture, navigation, manufacturing, and all other interests dependent upon the streams.

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#### The Question of Snow

THAT masses of snow on mountain sides maintain stream flow, there can be no doubt. The more of such snow, within limits, the better. But why argue that only the snow lying above timber line is desirable? Why not snow below timber line as well? Because it does not "drift?" Even so, is not the water which results from the melting of the snow in the forests absorbed up to the point of saturation, by the forest mulch, passed into the underground circulation, and otherwise handled exactly as rain deposited upon forested slopes?

A great point is made of the assertion that snow lying in the timber is quickly melted by the warm air of summer. Granting, for argument's sake, that this is true; suppose this timber were gone. Would the snow deposited on the same area lie unmelted longer than if the timber were there? Would the spring air be less warm? Would the snow water enter more readily the underground circulation after the slope had been bared by fire to the original rock bottom than it did when the ground was covered by soil, dead leaves, decaying branches, logs, and other forest litter? Instead, in the case of such an area is not every advantage, as regards slow melting and earth absorption, on the side of the forested and against the deforested slope?

Again, as to snow on forested as against snow on deforested slopes. If the unknown writer will turn to Marsh's "The Earth as Modified by Human Action" he will find that deforesting the slopes of the Alps aided

in producing avalanches, first of snow and then of earth. The author points out that the forest aided in holding both snow and soil in place. However, when this conservative influence was removed, great snow fields burst from their moorings and rushed down the mountain sides, leaving desolation and havoc in their wake; only to be followed, in some cases, by huge fields of earth, one such destroying an entire village.

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#### Where There Are No Snows

A GAIN, the anonymous writer devotes his whole attention to the question of forests, streams, snow, and water as connected with the high mountains of the far West. What of the comparatively low mountains of the East and South? He says "If we had no barren high-peaked mountains, we would have no rivers and no timber to preserve." "Timber has nothing to do with stream-water supply." In the East and South "barren high-peaked mountains," such as he is describing, do not exist. According to his theory, we should have in New England and the South, to say nothing of the Great Lake regions, no rivers and no timber at all. However, we have had, in all those regions, a magnificent forest growth and a series of great river systems. In the light of these facts the fallacy of this position becomes at once apparent. In the Southern Appalachians, notably, the snowfall is light, and there are not, as in Wisconsin and New Hampshire, systems of lakes, regularly filled by snowwaters, to feed, in a measure, the rivers through the summer. The one agency that exists here to conserve the streams in summer, standing out sharply and unconfused with any other, is the mountain forest. Facts are stubborn things; what will our writer do with such a fact as this? According to his view, there should not be a river in the entire South. Let him look at the map.

With the writer's naïve acceptance of "the dear old rainfall theory once held in such esteem," as shown by his declarations that trees in the plains country are needed to "induce rainfall" and

"trees in a hot country help to produce rain," we have here nothing to do except to indicate that crudities in several forms are grouped together in his article. His one correct position is the undisputed one that snowbanks in high mountains help to maintain stream-flow in summer. But if the opponents of the policy of National Forests on mountain slopes desire to continue their unequal warfare with its friends, they will find it necessary to produce stronger arguments than those found in the anonymous paper in the *Pacific Sportsman*.

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#### Nominate Members

A STUDY of the statistics of the membership campaign of the American Forestry Association shows that few if any lists are better for solicitation purposes than the list of nominees sent in by members of the Association. These names are evidently carefully selected and yield, on the whole, excellent results. We again earnestly urge our membership to aid the work of the Association by supplying names of possible members for the use of this office. A large and growing membership adds greatly to the prestige and power of this organization. It furnishes funds with which to prosecute the work, and it raises up a body of friends everywhere to sow the seed from which the ultimate harvest may be reaped.

In the advertising section will be found a blank space entitled "Nominations for Membership." Post-office regulations curtail its size; nevertheless, by pasting on a sheet of paper it may be indefinitely enlarged. Let every member faithfully use this form, and send in the names of all, whether few or many, whom he may believe would be willing to join the Association. And wherever possible let him use his personal influence with these to encourage, or even urge them to join. A few earnest, aggressive, working members, soliciting memberships, can very materially aid the progress of the organization. The existence of the present industrial stringency necessitates in-

creased activity on the part of our friends to insure the maintenance and growth of the Association. Let the nominations pour in, and let the activities of individual members be multiplied!

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#### Conservation of Human Resources

IT HAS been suggested that, among our national resources, those of most fundamental moment are human resources; and that, in fact, the reason why we seek to save the land is that we may thereby save the man.

Agencies exist for promoting directly this man-saving work. For example, *The Delineator* conducts through its pages, a "Child Rescue Campaign" for the child that needs a home and the home that needs a child. This work is prosecuted under the supervision of such representative and elect ladies as Mrs. Frederick Rockefeller McCormick, of Chicago; Mrs. William Jennings Bryan, of Lincoln, Nebr.; Mrs. Claude A. Swanson, of Richmond, Va., and Mrs. Robert M. La Follette, of Madison, Wis. Pictures of bright, promising children, for whom homes are sought, adorn the pages of this publication in each issue, while a recent number enumerates, among "Waifs Who Have Become Famous," Henry M. Stanley, Catherine the Good, Alexander Hamilton, Rosa Bonheur, Edgar Allan Poe, and Rachel, the noted actress.

Rome is said to have fallen through "failure in the crop of men." Such efforts as this of the *Delineator* aid in safeguarding America against such a fate.

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#### The Forestry Fight On in Denver

IN DENVER, Colo., which notably since the convention of June 18 to 20, 1907, has been regarded as in some measure the headquarters of the opposition to the National Forest policy, the fight is again on in earnest. The Denver Chamber of Commerce some time ago passed a set of resolutions endors-

ing the forestry policy of the Government. The resolutions were published next day in the papers. A vigorous protest from the anti-forestry people followed. A hearing was next given to the opponents by the Forestry Committee of the Chamber of Commerce. Their leading objections were published on April 25 in a Denver farm paper. Their catch-words are "great feudal estates," "paternalism," "bureaucracy," and "landlordism."

With these gentlemen, a National Forest is a "great feudal estate." The most elementary knowledge of feudalism will dispose of this objection. What is a feudal estate? An area of territory, larger or smaller, practically owned and absolutely controlled by an individual in his own interest. What is a National Forest? An area of territory, larger or smaller, absolutely owned and controlled by the whole people of the United States and administered in their own interest. The Western analogy to the feudal estate is the Scully estate. This is privately owned and privately administered against the interests of the tenants and in the interest of the owner. National Forest critics, however, seem to be finding no fault with such estates. Instead, they seem to prefer them to those publicly owned and administered. Ergo, instead of opposing "feudalism" they seem to be defending its modern analogue.

The term "paternalism" is equally unhappy. It comes from "pater," father. It represents a one-man form of government; originally that of the patriarch (pater, father; arch, ruler); later, of the king, who succeeded him. About 1776 the king was put out of business on this side of the water. A new government followed, described by Lincoln as "of the people, for the people, and by the people."

A people's government is the exact opposite of a paternal government. The National Forests are governed by the people's government. To describe their rule as "paternalistic" is to employ a contradiction of terms; it is to make words meaningless.

The "modern instance" of paternalism is government by the plutocrat; by the Scully, Rockefeller, Harriman, or other "undesirable citizen" of that type. The time has come when we must choose between government by the people and government by the plutocrat. The Denver objectors prefer, seemingly, government by the latter; the people will probably continue to prefer government by themselves.

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### "Bureaucracy"

AS TO "bureaucracy," or government by bureaus. The type of such government is that of France, under Louis XIV, and Russia, under Czar Nicholas. In other words, autocracy and bureaucracy are twins. The less popular, the more bureaucratic the government, and conversely.

Winter sometimes lingers in the lap of spring; similarly, old institutions sometimes linger under new forms. A measure of bureaucracy may survive in a democracy. The remedy, however, is not the substitution of autocracy. If the United States Post-office is bureaucratic, to turn it over to a private corporation would be to jump out of the frying pan into the fire. The remedy lies in increasing rather than diminishing control by the people.

If critics can point to bureaucratic survivals in the Agricultural Department or its sub-divisions, let them insist upon more, rather than less, popular government.

And popular government, be it remembered, is constitutional government; government by law, not by the mob. Let the critics propose laws that will enlarge the power of the people over their forests and make the administration of these more consonant with the popular will and interest. Until such legislation be proposed, the natural inference will be that the present administration of these great public estates represents not too slightly, but too completely, the interests of the whole American people.

## Government "Taxes"

**A**NOTHER Denver criticism is that the National Forests are handled "at the expense of our Western people, through the imposition of taxes for lumber, grazing, rights of way, firewood, and multitudinous special uses." To this policy it objects.

Let us examine this criticism. The American people, some eighty millions, own certain National Forest areas in the far West. Certain other American citizens, a few hundred, or a few thousand at best, live near the National Forests. These near dwellers desire to avail themselves of the utilities named. The eighty millions are willing that, within reason, they shall do so. The users now may use on one of two conditions: Either with, or without pay. The owners say the users shall pay; to this, some of these users evidently object and stigmatize the pay as a "tax." They evidently want the utilities as a gift.

Suppose the eighty millions adopted this policy with respect to the National Forests. Consistency would then require that they should apply the same policy to their other properties. Of these, they own several. In your town, for example, the American people own a public building. Why should they not turn this over to the use of a handful of your leading citizens?

The eighty millions own sundry battle-ships. Why not permit certain distinguished individuals living near the waters where these vessels ride at anchor to use them gratuitously as private yachts?

The eighty millions own an ocean cable in Alaskan waters. Why not donate the free use of this cable to the few Indians and Americans who live near its termini?

The American people own some railroads: For example, in Panama and on certain reclamation projects. These could doubtless be availed of by people living near by, who might ride on them to and from their work, or their pleasure. Why should the Government "hog" them?

At Fort Leavenworth the eighty millions own a big building. It was built for a Federal penitentiary and is so used. It would make an elegant gymnasium or riding school for the "leisure class" living near. Why not convert it to this use instead of excluding these eminent citizens unless they choose to enter in stripes?

The eighty millions own a few buildings—far fewer than they need—in Washington, D. C. Business men residing here could utilize these to excellent advantage for office purposes. Why should they not be permitted freely to do so?

The White House grounds would make an elegant cow-pasture for certain descendants of Ham living hard by. How selfish and cruel of the owners sternly to exclude each and every one of these hungry bovines from this property!

Evidently, the whole policy of the eighty millions regarding the fag end of the United States which still belongs to them is wrong. Whatever it has left it should throw wide open, like the Cherokee Strip or Sisseton reservation, for the man who can get there first. It belongs to the people; is he not the people? Surely, the time has come for a new and "squarer" deal in the management of our public property. The handful of Denver critics who are leading in this fight will live in history with the Adamsses, Paines, Henrys, Franklins, and the rest who stood for freedom a century and a quarter ago.

## NEWS AND NOTES

### Irrigation Development in Washington

FOUR thousand acres of historic ground, surrounding old Fort Okanogan, Wash., northwest of Spokane, is to be put under ditch by J. G. McDonnell and J. B. Vallentine, and it is estimated that the cost of installing the plant will be \$125,000. Water will be taken from the Columbia River.

Water for the tract, to be known as Bridgeport Orchards, will be distributed by gravity from a large reservoir. A pumping plant with a capacity of twenty thousand gallons a minute will be installed, operated by a gas-producer engine of two hundred horsepower. The water will be lifted fifty feet into the reservoir, from which it will be distributed through ditches. The domestic water problem is easily solved, for the reason that water can be reached by boring only a few feet. Four and a half miles of ditches will be dug.

Bridgeport is 738 feet above sea level. A part of the land to be irrigated has been under cultivation for years, and there are several ten-year-old orchards. Some of these have made remarkable yields even without irrigation.

With the exception of the Astoria settlement, made by the elder John Jacob Astor, Fort Okanogan is the oldest habitation of white men in the Northwest. While the land will produce abundantly without irrigation, there have been half a dozen projects started during the last twenty years to put it under the ditch, but all for some reason have ended in failure. Now there is every indication that the district will soon have railroad transportation by the building of the Okanogan Electric Railway Company's line between Nighthawk and Brewster, Wash., by Col. A. M. Dewey, of Spokane, and his associates, and this will mean rapid development. Work on the line seventy-five miles in length, will begin July 1.

The lands are cheap, costing not more than \$50 an acre, this being because of the lack of water and transportation facilities. The Great Northern Railway has completed the purchase of a right of way between Wenatchee and Oroville, and is now asking for an easement across state lands which indicates that it will begin construction of its branch line in the near future. At the same time Congress is busy with the project of making the Columbia navigable. There are also a number of smaller railroad-building projects, which, if carried out, will provide transportation for most of the river between the junction of the Kettle River and the Bend d'Oreille, above which there are now railroad lines. Between Kettle Falls and Wenatchee there is river-boat service.

Based on what is being done at Wenatchee, Yakima, Prosser and Spokane Valleys, where the most intelligent horticulture is followed, it is estimated that a five-year-old tree should average twelve boxes of apples every year. These should sell at from \$1 to \$2. There are from fifty-four to eighty trees to the acre, so the yield of an orchard should be from \$1,200 to \$2,500 an acre. Of course, this is done only when the most modern methods are employed, both as to growing the crop and marketing it.

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### Reclamation Work for Socialist Settlement

THE Adrian Irrigation Company, founded by James J. Hill, nine years ago, and abandoned after a large expenditure of money, has been resurrected by Spokane people, headed by H. Rosenzweig, president; J. S. Lichty, secretary and manager, and O. L. Waller, acting president of the Washington State College, chief engineer.



H. B. Garrett is assistant engineer and has charge of the work. The company proposes to irrigate five thousand acres of land near Soap Lake, Wash., 112 miles west of Spokane. Most of the promoters are socialists, and the company will be cooperative. The stock is \$75 a share cash, and \$100 on payments. It is distributed among the members, on installments, by paying \$10 to \$20 a month.

The company is incorporated for \$300,000, the stock being divided into three thousand shares at \$100 each. It is the intention to sell \$150,000 worth of the stock, which is considered sufficient to put all the five thousand acres under a high state of cultivation. Practically all of the land will then be set out in orchard. At the completion of the irrigation system, and when all the land is in cultivation, each holder of a share of stock fully paid for may exchange it for an acre of land, to which he will be given a warranty deed and perpetual water rights. However, Mr. Lichty says that not one per cent. of the stockholders will exchange their stock for the absolute title to one acre, for the reason that this would deprive them of their community rights in the personal property of the company, which will be worth several thousand dollars, and also of any share in the big industrial enterprises and municipality that is to be developed in the district.

The company's plan involves the building of an enormous dam, the development of several thousand electrical horsepower, the platting and incorporation of a town, all the stores of which are to belong to the company and sell their goods to the people at cost. The town will be governed according to plans yet to be decided upon, but one important feature of the municipal constitution will be the initiative and referendum.

These things belong to the more distant future, and the promoters do not expect to see them realities in less than five years, because of the expense they involve, but there will be enough activity along other lines during the next

two years. It is expected to have one thousand acres set in orchard by next fall, and water will be available for the larger part of the district next spring. All of the land will be watered by gravity flow during the early part of the season, but after July it will be necessary to pump the water, and for this purpose a large pumping plant will be built. Work on this part of the enterprise is now in progress.

Twenty-five men and teams are digging laterals, deepening the main ditch, building the pumping station and laying the foundation for the dam. The ground will all be ready for cultivation next fall, when the first trees will be planted. Ten miles of the ditch is completed, and the hoisting pump will be installed and the main canal completed and ready to supply water early in June. The company has sufficient capital on hand to insure the completion of the work. The land was bought for \$5 an acre, and the improvements, including the irrigation plant, will cost \$250,000, or \$50 an acre.

Adrian is in the heart of the Big Bend country. The land is volcanic ash covered with sagebrush, and the fact that the entire tract is almost as level as the sea indicates that the soil does not blow or shift with the winds. The elevation of the district is one thousand two hundred feet. The land is along the banks of Crab Creek, a stream of the "desert," as it might be called by those unacquainted with the remarkable fertility of the miles of sagebrush land that stretch away in every direction.

Water for irrigation will be taken from Brook Lake, a deep body of clear water, covering one thousand acres. It is one of the chain of lakes all fed by Crab Creek. These lakes are really only deep chasms in the coulee through which the stream runs. The first of the chain is Long Lake, then Tule Lake, next Little Lake, and the last and largest is Brook Lake. Between these, Crab Creek runs through a deep coulee, and this gulch, with its rocky, precipitous banks, will be turned into a vast



reservoir, as will also the lakes themselves.

To accomplish this it will be necessary to build a concrete dam forty feet high at the outlet of Brook Lake. From Long Lake to Brook Lake is a distance of several miles, and the average fall of the land is eighteen inches to the mile, hence the necessity of a high dam to raise the level of the upper lakes and fill the coulee. When the dam is completed several hundred acres of meadow land at the upper end of Brook Lake will be overflowed, and before the project can be carried out this must be purchased.

This, together with the cost of the dam, makes the project too expensive for the present undertaking, and the dam will be made only ten feet high. At this height it will give gravity flow for the entire district during the earlier part of the season, and the auxiliary pumping plant will be used after July. The land to be irrigated is ten miles below Brook Lake, hence about fifteen feet lower in elevation. During the dry season it will be necessary to lift the water sixteen feet.

When the big dam is completed there will be a natural water power available, and this is to be developed. It will be used to light the town, which is to be established by that time, to operate the cannery and perform any other work that may be required. The cannery and a drying-house are to be built next year to take care of the surplus products of the district.

The pumping plant will be located at the mouth of the main ditch and will be operated by an eight-horsepower gasoline engine. The pump will have a capacity of lifting thirty-two cubic feet of water a minute, which is estimated sufficient to irrigate three thousand acres. It will cost \$7,000. The capacity of the plant will be increased in 1909.

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#### Big Project for Palouse Country

FOUR thousand acres of land near Hooper, Whitman Co., Wash., south of Spokane, to be known as Pa-

louse Orchards, owned by the Palouse Irrigation and Power Company, headed by H. C. Peters, president, and L. H. Marsh, secretary, will be put under irrigation within the next twelve months, and it is expected that five hundred acres of this will be ready for this year's crop.

Water for the new district will be taken from the Palouse River, which will be tapped by a canal four miles above Hooper, and brought down one mile below the town, whence a wooden flume twenty-four by thirty inches will carry the water one mile farther down the river to the tract of five hundred acres that is to be watered at once. Later a large flume will tap the canal at the same place as the small one and will be led across to the north bank of the river to carry water down to the other tracts that are to be put under the ditch.

Palouse Orchards is unlike any other irrigation project in the Northwest. Instead of one large and continuous tract on one or both sides of the river, it is a series of tracts lying between the river and the high hills on either side, no one tract containing more than five hundred acres. The land extends down the river ten miles, and is close to the base of steep hills and almost surrounded in patches by the ragged arms of the cliffs that jut out into the valley. The land is volcanic ash and the climate is similar to that of Wenatchee, "the home of the big red apple."

Ample water flows in the Palouse River at the dry season to water all of the land that is to be put under the ditch this year, and perhaps all of the four thousand acres, but the Palouse Irrigation and Power Company, which is promoting the project, will not take any chances on a shortage in water supply. Rock Lake, which is ten miles north of Hooper, is to be turned into a vast reservoir and its waters used in the irrigation project.

This will be accomplished by building a dam across Rock Creek, the lake's outlet. It will require \$1,500 to build a dam to raise the water in the lake

several feet and furnish sufficient water for the land owned by the Palouse Irrigation and Power Company. The lake is ten miles in length and from one-half to three-quarters of a mile in width. This work will be done next year. The company owns the water rights on the Palouse River and on Rock Creek and Rock Lake.

At the point where the main canal taps the Palouse River a dam one hundred feet in length has been built at a cost of \$14,000. This will divert practically all of the flow of the river into the canal during the minimum flow, if it is needed. The dam is solid concrete, its foundation resting on the solid rock in the bed of the river.

In taking the water from the river it has been necessary to tunnel seventy feet through the solid rock, and at that point the flood gates are established, keeping the water under perfect control. During certain months of the year enough water rushes down the channel of the Palouse to water one hundred thousand acres.

Three railroads will operate through the district, and of these the Oregon Railroad and Navigation Company is hauling traffic. The others are the Spokane, Portland & Seattle, and the North Coast Railway. Grading will be completed on the Spokane, Portland & Seattle by June 1, and trains will probably be in operation by the end of the year.

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#### American Irrigation Scheme

ONE hundred thousand dollars will be expended by D. K. McDonald and A. C. Jamieson, of Spokane, in installing an irrigation plant and domestic water system on one thousand acres of land in the Spokane Valley, five and a half miles east of here. Two wells with a combined capacity of eight thousand gallons a minute will be bored, and water for irrigating land will be distributed by means of ditches and flumes. The pumps will be driven by electrical power, the cost of this apparatus being \$10,000. The land will cost \$100,000, and it is expected to have it in readiness

for next spring. Electric lights, telephones, and other conveniences will be installed.

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#### More Resolutions

THE following resolutions were adopted by the Faculty of the School of Agriculture, of the Pennsylvania State College, at a meeting held recently:

*Whereas*, The great natural resources of this and other states in the Appalachian region are being exhausted rapidly for the purpose of immediate development and profit without proper regard for the future agricultural possibilities of this State; and

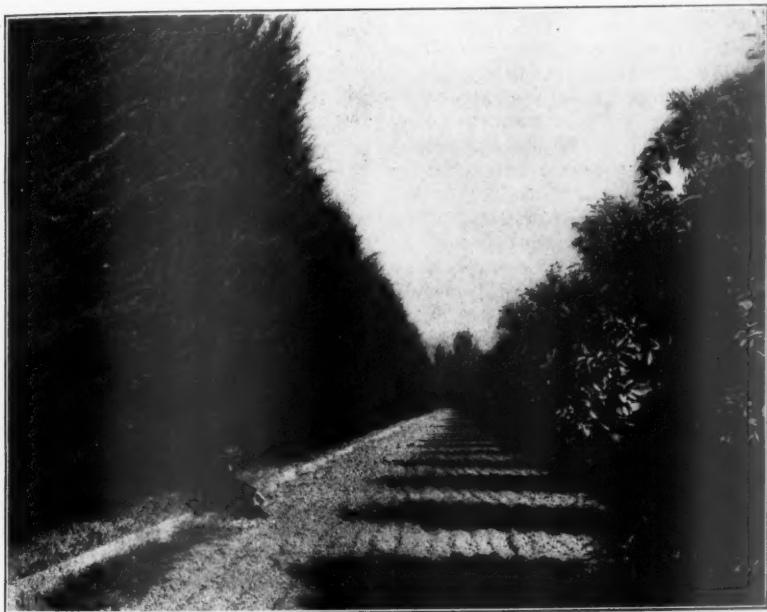
*Whereas*, Investigations of the United States Forest Service have shown that the destruction of the forest cover on our mountains and hills has not only destroyed in large part the lumber industry of the East, and seriously injured mining and manufacturing industries which are dependent upon a regular and permanent supply of timber, but have also shown that the wholesale clearing of forests from the watersheds of streams rising in the Appalachian Mountains has resulted in tremendous and irreparable damage to farms and orchards along these streams. The erosive action of freshets and floods has seriously injured agricultural land upon steep hillsides, and by the covering of bottom lands with gravel and other debris has rendered lands valueless for farming purposes. It has been shown that with a forest cover at the head waters of the streams and upon steep mountain sides the very disastrous floods of recent years could not have occurred. Therefore, be it

*Resolved*, That the Faculty of the School of Agriculture of the Pennsylvania State College recommend the increase of forest ownership and control by the National Government, and to further this movement recommends the early establishment of the proposed Appalachian-White Mountain Reserves. And be it further

*Resolved*, That we recommend that measures for reforestation upon our National forests be begun and pushed rapidly forward.

*Resolved, further, also*, That copies of these resolutions be sent to the Representative in Congress from this dis-

collecting data for the benefit of the agriculturists who are developing the Western plains. At present windbreaks are planted haphazard, one kind here, another there. If one kind is better than another, the government experts think that fact ought to be known,



WINDBREAK

Monterey Cypress Sheltering an Orange Orchard, San Bernardino County, California

trict, with the request that he support, so far as possible, the recommendations herein made.

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#### Government to Study Shelterbelts for Benefit of Farming Interests

UNCLE SAM'S tree-planting and farm experts have just undertaken a practical and scientific study of the use and effect of timber windbreaks and shelterbelts in the agricultural regions of fourteen Western states. This is the first time in this country that a study of this much-discussed question has been undertaken over a wide region under one plan, for the purpose of

and it is believed that the study about to be undertaken will settle the question once for all. It will at least collect such facts never before brought together.

The work will be done by the United States Forest Service. In some states the agricultural experiment stations will cooperate in the studies, and in these cases the Forest Service will provide the necessary apparatus, and the other expenses will be shared half and half by the Government and experiment stations. The investigations will be taken up in five states this year and extended to the other nine as rapidly as the investigations are completed. Four of the states in which the study will be

made this year are Nebraska, Colorado, Oklahoma, and Kansas. The fifth will be either Minnesota, North Dakota, or Iowa. Ultimately the investigations will cover Minnesota, North Dakota, South Dakota, Nebraska, Iowa, Kansas, Oklahoma, Colorado, Texas, New Mexico, Utah, California, Washington, and Idaho.

The sudden ruin that hot winds sometimes bring to growing crops in parts of the West is well known. Blowing strongly across the unobstructed plains, these winds may in a few days blast all hope of even a partial harvest. This is particularly true in the lower portion of the central plains region, and in years of unusually low rainfall. Here the winds most to be feared blow from the southwest or south. In the northern prairie region the former is exposed to the hot "Chinook" wind, which sweeps down from the Canadian mountains. This either dries out growing crops, or, if it prevails before the danger of killing frosts is past, causes loss through urging vegetation forward prematurely. Cold winter winds also do great injury to crops, make the climate more severe for stock and men, and interfere with an even covering of snow upon the ground. This is true from Canada almost to the Gulf.

In Southern California, dry winds from the north and northeast sweep down from the Mohave Desert with destructive results. Coming in June, these winds may reduce the wheat yield of unprotected fields to almost nothing. Windbreaks of eucalyptus and Monterey cypress, now in such common use to protect orange groves and orchards, long ago convinced possessors of highly valuable irrigated land of the value of tree planting for protection purposes.

But there are two sides to the windbreak question. Some prairie farmers declare positively that belts of osage orange, for instance, are a "nuisance." Others cite figures to show positive benefit. Mr. Morris Thompson who lives near Downs, Kans., gives his yield of corn from a field protected on the south by a row of tall cottonwoods as

six bushels per acre more than in places where there is no protection. About fifteen acres are benefited in this way. It is highly improbable that the windbreak occupies sufficient land to offset this benefit.

An Illinois farmer sums up his observations upon this matter thus: "My experience is that now, in cold and stormy winters, wheat protected by timberbelts yields full crops, while fields not protected yield only one-third of a crop. Twenty-five or thirty years ago we never had any wheat killed by winter frosts, and every year a full crop of peaches, which is now rare. At that time we had plenty of timber around our fields and orchards, now cleared away."

The Forest Service proposes to find out just when and how much windbreaks increase the yield of crops. To carry out the plans, much technical work will be necessary. Instruments will be used to measure heat and cold, moisture and dryness, both above and below ground; to register the force of the wind near the windbreaks, and some distance away; to measure light intensity, and take note of the effects of shade; to register frost at different distances from the trees; and to keep account of the effect of the windbreaks on the snow which covers the ground to leeward in winter. Many other measurements and tests will be made, and elaborate data will be collected by experts who will have charge of the study.

Many disputed questions will thus be settled and the data gathered will be placed at the disposal of the farmers who desire it. Doubtless rows of trees between fields sometimes do more harm than good, by casting shade and abstracting water from the soil. Trees may also increase the danger from frost, since the movement of the air lessens that danger. The Forest Service will study all sorts of conditions, including the relative value of windbreaks, consisting of a single row of trees, and shelterbelts, made up of a number of such rows. A windbreak is usually planted for protection alone,

a shelterbelt for both protection and the growing of timber.

Corn will be the crop studied behind the windbreak this year. Trustworthy conclusions cannot be obtained by comparing results from different crops. Each crop makes its own demand upon the soil, so that what would destroy one might do little harm to another. Corn is a particularly good crop to experiment with because it is easily injured by hot, dry winds, will not stand shading, and is very sensitive to frost.

The instruments and apparatus for each state will be read weekly by persons assigned to that duty by the Agricultural Experiment Stations in the respective states. The whole work will be in charge of an expert for the Forest Service at Washington, who will be assisted this summer by three or four persons, also from the Forest Service, who will study general conditions in the states under investigation, in regard to the effect of windbreaks on crops. The work will continue until crops are gathered next fall, when the actual yield of sheltered fields will be measured, and results compared with near-by unsheltered fields. Some of the observations will continue through the winter.

It is expected that the results will be published both by the Forest Service and by the experiment stations which cooperate in carrying out the work.

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#### Wood-pulp Report

A PRELIMINARY report of the consumption of pulp wood and the amount of pulp manufactured last year has just been issued by the Bureau of the Census. The advance statement is made from the statistics collected by the Census Bureau in cooperation with the United States Forest Service.

Many of the figures bring out interesting facts which show the rapid growth of the paper-making and allied industries during the last decade. Nearly four million cords of wood, in exact numbers 3,962,660 cords, were used in the United States in the manufacture of

paper pulp last year just twice as much as was used in 1899, the first year for which detailed figures were available. More than two and one-half million tons of pulp were produced. The pulp mills used three hundred thousand more cords of wood in 1907 than in the previous year.

The amount of spruce used was sixty-eight per cent. of the total consumption of pulp wood, or 2,700,000 cords. The increased price of spruce has turned the attention of paper manufacturers to a number of other woods, hemlock ranking next, with 576,000 cords, or fourteen per cent. of the total consumption. More than nine per cent. was poplar, and the remainder consisted of relatively small amounts of pine, cottonwood, balsam, and other woods.

There was a marked increase last year in the importation of spruce, which has always been the most popular wood for pulp. For a number of years pulp manufacturers of this country have been heavily importing spruce from Canada, since the available supply of this wood in the north-central and New England states, where most of the pulp mills are located, is not equal to the demand. Figures show that the amount of this valuable pulp wood brought into this country was more than two and one-half times as great in 1907 as in 1899. In 1907 the importations were larger than ever before, being twenty-five per cent. greater than in 1906. The spruce imports last year amounted to more than one-third of the consumption of spruce pulp wood. Only a slightly greater amount of domestic spruce was used than in 1906.

Large quantities of hemlock were used by the Wisconsin pulp mills, and the report shows that the Beaver State now ranks third in pulp production, New York and Maine ranking first and second, respectively. Poplar has been used for a long time in the manufacture of high-grade paper, but the supply of this wood is limited and the consumption of it has not increased rapidly.

Wood pulp is usually made by either one of two general processes, mechani-



cal or chemical. In the mechanical process the wood, after being cut into suitable sizes and barked, is held against revolving grindstones in a stream of water and thus reduced to pulp. In the chemical process the barked wood is reduced to chips and cooked in large digesters with chemicals which destroy the cementing material of the fibers and leave practically pure cellulose. This is then washed and screened to render it suitable for paper making. The chemicals ordinarily used are either bi-sulphite of lime or caustic soda. A little over half of the pulp manufactured last year was made by the sulphite process, and about one-third by the mechanical process, the remainder being produced by the soda process. Much of the mechanical pulp, or ground wood as it is commonly called, is used in the making of newspaper. It is never used alone in making white paper, but always mixed with some sulphite fiber to give the paper strength. A cord of wood ordinarily yields about one ton of mechanical pulp or about one-half ton of chemical pulp.



#### France's Far-sighted Forest Policy

FRANCE has under way a far-sighted forest policy which will require two centuries before the work reaches its greatest efficiency. The plan covers the reforestation of vast tracts of denuded land and the work is in the hands of four thousand trained foresters in the pay of the Republic, and a large number of men employed by the communal governments.

Consul General R. P. Skinner tells how this work is being done by a great nation keenly alive to the necessity of doing it, and determined that it shall be done well, though years and centuries are consumed in the doing. Colbert, in the reign of Louis XIV. exclaimed: "France will perish for lack of wood," and his prophecy was coming true a century and a half later, when the French people awakened to the peril which threatened them, and called a halt.

Their forests were vanishing as are those in the United States to-day, but the depletion had gone even farther than it has yet gone in America. France commenced protecting and restoring its wooded areas nearly a century ago, and has stuck to the task ever since, but so much yet remains to do that Mr. Skinner says in his report:

"The work is slow. It will require probably two hundred years to bring it up to its maximum effectiveness. But the time is foreseen when existing damaged forests will be reconstituted, and when all the waste spaces will be replanted to the point of proper proportion to insure the conservation of the water supply, and to furnish the timber and wood required by the population. The effect upon private landowners of this public work has been most salutary. Where bald mountains have been replanted, very surprising local results are now visible to all observers. This is especially true in the Hautes Alpes, which had the enviable reputation of being the poorest department of France, and is, in fact, one of the few from which the United States has received several thousand French immigrants. There are now many artificially planted forests in this department of twenty-five years' standing, and in the bottomland below, conditions have so improved that a state of general prosperity prevails."

The plan of the French foresters is comprehensive. It embraces the care of forest land, planting of trees, fixation of dunes near the coasts to prevent the drifting of sand upon agricultural land, utilization of water in pastoral and forest regions, and the surveillance of river fishing and fish culture. This comprehensive service extends to every part of the Republic.

The area of the National Forests of the United States exceeds twenty-fold the national and communal forests of France, but the problems are the same. France has been longer at the work and when it began its forests were in a worse condition than ours are now, but no worse than our privately owned



forests will be if present methods continue.

Consul General Skinner concludes his report with the suggestion to those in America who have shown sufficient interest in the matter to write him on the subject:

"If correspondents could penetrate, as the writer has done, the almost inaccessible mountain villages of this country, and there discover the enthusiastic French forester at work, applying scientific methods which cannot come to fruition before two or three hundred years, they would retire full of admiration and surprise and carry the lesson back to the United States."

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#### The American Nile

THE Geological Survey has published (in Water-supply Paper No. 211) a most interesting comparison of the Nile, the Colorado, which has been called the Nile of America, and the Susquehanna. The Nile and Colorado are similar in type, and the Susquehanna is introduced to show the difference in flow between arid and humid regions. The comparison uses a normal year based upon records for the Colorado and Susquehanna, collected by the Survey in the last ten years, and such data as could be found in regard to the Nile. The Colorado is taken as the standard of comparison.

The Nile has 5.7 times the drainage area and the Susquehanna about one-eighth the area of the Colorado.

The rainfall in the Nile basin is 3.8 times greater; that in the Susquehanna basin is 4.5 times greater. The run-off per square mile from the Nile basin is 1.9 times greater; that from the Susquehanna basin is thirty-seven times greater. The ratio of run-off to rainfall in the Nile basin is one-half as

great; that of the Susquehanna basin is 8.2 times greater.

The discharge of the Nile is 10.8 times greater; that of the Susquehanna is 4.5 times greater.

The maximum flow of the Nile is about three hundred fifty-three thousand second-feet, and occurs about the first of September; that of the Colorado is from seventy thousand to one hundred ten thousand second-feet, and occurs in May, June, or July; that of the Susquehanna is from two hundred thousand to four hundred thousand second-feet, and occurs during March, April, and May.

The minimum flow of the Nile is about fourteen thousand five hundred second feet, and occurs about the end of May; that of the Colorado is from two thousand five hundred to three thousand second-feet, and occurs during January and February; that of the Susquehanna is from two thousand five hundred to five thousand second-feet, and occurs in September and October.

The mean flow of the Nile is about one hundred fifteen thousand eight hundred second-feet, of the Colorado about ten thousand seven hundred second-feet, of the Susquehanna about forty-three thousand second-feet.

Estimates of the amount of sediment carried by the Nile and Susquehanna are not given, but the water of the Colorado is said to carry an immense amount, reaching as high as two thousand parts of sediment to one hundred thousand parts of water. Prof. R. H. Forbes, in a bulletin of the Arizona Agricultural Experiment Station, states that "it is estimated conservatively that the river brought down during 1900 about sixty-one million tons of sedimentary material, which, condensed to the form of solid rock, is enough to cover 26.4 square miles one foot deep, or to make about 164 square miles of recently settled submerged mud one foot deep."





## THE DRYAD'S LAST STAND

By VICTORIA ELISABETH GITTINGS, Baltimore, Md.

I  
WINTRY nights, when weird and eerie  
Clouds fly swiftly o'er the moon;  
When the wind howls mad and dreary,  
Then drops sadly to a croon;  
Stir we restless in our dreams:  
Something in the air there seems.

II  
Not broom-mounted witches riding  
To their Sabbats, whip and spur;  
Neither elves the morning biding;  
Nor lost souls, as some aver.  
'Tis the Dryads of the trees,  
Worshipped long in ancient Greece.

III  
Swaying, rhythmic as their tree-tops,  
Wringing hands so slim and fair,  
Loud they mourn the land of Cecrops—  
For their homes were sacred there.  
"What can we poor Dryads do?  
With our woods, they slay us too!"

IV  
Recently they held a meeting  
Weighty was the theme discussed;  
Anxiously they kept repeating  
That preserve their trees they must.  
"Man has proved our deadly foe;  
Either he or we must go!"

V  
"Through the land is heard the droning  
Of the forest guillotine."  
Here a deep and dirge-like moaning,  
Answered from the nymphs in green:  
"Vain in council are we met;  
Man is on destruction set."

VI  
Then a Hamadryad older,  
Wiser far than all the rest,  
Cushioned on a lichened boulder,  
Silenced them, and thus addressed:  
"Wood-nymphs all, be still, attend;  
Hear me patient to the end!"

VII  
"True it is that mortals doom us,  
All to perish from the land.  
Strong enough they to entomb us;  
Weak indeed is our small band.  
But restrain your grief and see  
Whether man the gainer be.

MALONE

VIII

"When abroad in heat of noon-day,  
Vainly will he seek the shade;  
Vainly trust his footsteps soon may  
Lead him to some sheltered glade.  
When for cooling draughts he'll long,  
Hushed will be the brook's glad song.

IX

"Poet and his artist brother,  
Sick of ocean's monotone,  
Will begin to search for other  
Subjects in the forests lone.  
But of these no trace they'll find—  
Save the dead roots left behind."

X

With surprise in growing measure  
Did these words the wood-nymphs hear;  
Gone, the speaker marked with pleasure,  
Were repining sigh and tear.  
Then he finished: "Man should weigh  
'Gainst his gains, the price to pay!"

XI

"Now, my nymphs, I'm weary dwelling  
On man's folly, in good sooth,  
Gained my object, all-compelling,  
Which was to convey this truth:  
That revenge will yet be ours,  
E'en though dealt by higher Powers."

XII

"Then your counsel is, O brother,"  
Cried a Dryad young and fair,  
"That we struggle not, but smother  
Love of life in meek despair.  
This—your pardon, I entreat—  
This is neither wise nor meet!"

XIII

"Now, if we succeed in showing,  
Poor, dull-witted man that he  
For his own loved race is sowing  
Seeds of future misery—  
Haply he will pause—take breath,  
Think—and stop his work of death."

XIV

Such the cordial, hearty greeting,  
Given to this hopeful speech  
That when dawn broke up the meeting,  
Each nymph pledged herself to teach  
Erring man his ways to mend,  
That he spare his life's true friend!

## IN THE DEPARTMENTS

### Forest Service, Reclamation Service, Geological Survey

#### Washington National Forest

LAST summer the Geological Survey began the mapping of the Mount Baker quadrangle, in the state of Washington. This area lies in the northwestern corner of the Washington National Forest, west of the main range of the Cascades, north of the Skagit River, and south of the British Columbia boundary. It is a region of low valleys, high mountains, heavy timber, and dense brush. Standing as it does almost directly east of the Straits of Fuca, it catches all the precipitation brought in by the moisture-laden winds of the Pacific, and hence it rains much of the time, although there is a so-called dry season from June to September.

The area is covered with a splendid growth of fir and cedar, some of the fir trees being sixteen feet in diameter, while many of the cedars are twelve feet. This forest would be much improved if the ripe, dead, and down timber were removed, thus facilitating the more rapid growth of the young trees. Cutting the timber could easily be accomplished, as the slopes all lead down to railway transportation, a short distance to tidewater and market.

The two main valleys, the Skagit and Nooksack, are low, and an immense number of smaller streams flow into them. All carry large volumes of water over steep gradients and offer unexcelled opportunities for the development of water power, which will undoubtedly sometime be utilized. Two large cement plants at the village of Baker now get their power from side streams above them, using small volume of water under big head, and a large electric plant on the North Fork of the Nooksack furnishes light and power to the city of Bellingham.

Mount Baker, ten thousand eight hundred feet, and Mount Shuksan, nine thousand one hundred feet, are the most prominent peaks in this region. Baker Lake, seven miles east of Mount Baker, and six miles south of Mount Shuksan, is only six hundred sixty feet above the sea.

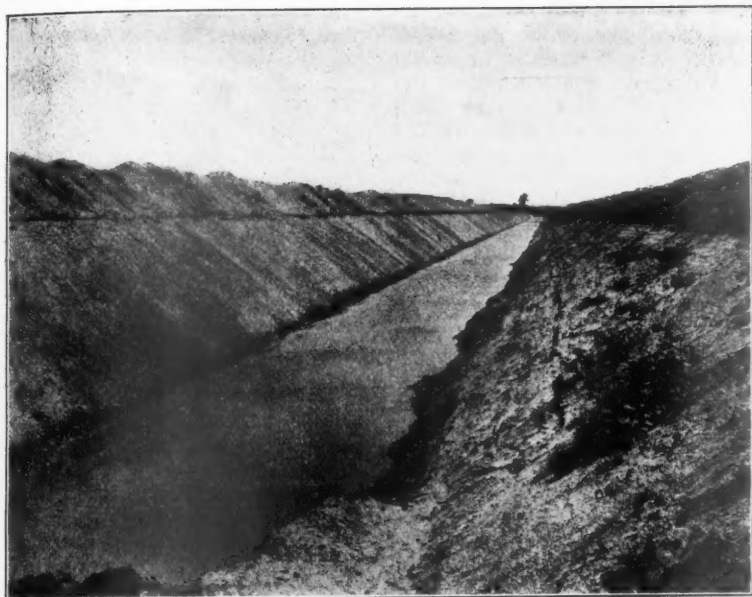
The glaciers of Mount Baker are among the largest ice fields in the United States proper, and reach down to three thousand five hundred feet above sea level.

Travel in this region is mostly on foot, as roads and trails are few and it is impossible to take animals away from them. Under such conditions the making of a topographic survey is most laborious. The worker must fight his way through brush and over fallen logs and wade ice-cold streams while toiling up or down steep slopes with a pack on his back containing short rations and scanty bedding, sleeping nights at any place he happens to be, always tired, and most of the time hungry, wet, and ragged.



#### Reclamation in the Northwest

THE great agricultural development now going on in the far Northwest is attracting widespread interest throughout the country. On three of the Government irrigation projects approximately one hundred thousand acres of fine farming land is now ready for settlement. These lands lie under the Lower Yellowstone project, Montana-North Dakota, the Huntley project in Southern Montana, and the Shoshone project in Northern Wyoming. The projects are divided in forty-acre and eighty-acre farms, which are given away to bona fide settlers, who are required to pay only the actual



LOWER YELLOWSTONE PROJECT, MONTANA

Finished Portion of the Main Canal, Sixty Miles in Length

cost of building the irrigation works. This cost is divided pro rata among the lands benefited, and is payable in ten annual instalments without interest.

That homeseekers are not overlooking this opportunity is evident. Hundreds of inquiries are being received daily at the office of the Reclamation Service, and trainloads of settlers are hastening to the new fields. Compact farming communities are being established along the canal lines, and villages and towns are appearing as if by magic.

These projects possess many conditions in common. Excellent transportation facilities are afforded by the C., B. & Q., Northern Pacific, and Great Northern Railroads, which connect them with the Denver, Twin Cities, and Pacific coast markets. The irrigable lands are surrounded by a fine free-range country, and alfalfa, the great forage crop of the West, is especially adapted to the soil and climate. The lands lie at an elevation of from three thousand to four thousand feet above

sea level, the climate is healthful and delightful, and the soil is of exceptional fertility. Sugar beets promise to be a profitable crop. A beet-sugar factory is already established at Billings, near the Huntley project, and factories on the other projects are assured as soon as areas large enough to warrant their establishment are cultivated. Cereals, apples, small fruits, and garden vegetables do well, and it is probable that these valleys will develop into excellent dairy countries. Many thriving towns have sprung up along the railroad lines, so that all the farms will be within short distances of shipping points. Cheap fuel is found in the lignite mines of North Dakota and the coal mines and forests of Northern Wyoming.

The lands now open to settlement under the Shoshone project consist of fifteen thousand acres lying about seventy-five miles east of the Yellowstone National Park. The farm units are eighty acres, and the building charge,

\$45 per acre, payable in not less than five nor more than ten annual instalments. In addition there is an annual charge of \$1 per acre for operation and maintenance. One-tenth of the building charge and one year's maintenance and operation fee, or \$5.50 per acre, becomes due at the time of filing.

The Huntley project is situated on a part of the ceded portion of the Crow Indian reservation, and settlers are required to pay \$4 per acre to the Indians, \$1 at the time of entry, and 75 cents annually for four years. The cost of building the irrigation works is \$30 per acre, payable at \$3 per annum for ten years; the payments may be made in five years if desired. The maintenance charge is 60 cents per acre. The first payment of \$4.60 becomes due when the land is filed on.

The cost per acre of water rights on the Lower Yellowstone system has not yet been determined, but water will be available for forty-eight thousand acres in the spring of 1909.



#### Would Prevent Spring Floods

THE greatest development of water power that has ever taken place in the United States has been accomplished during the last few years on the rivers which drain the Southern Appalachian Mountains, according to an official report on the water resources of this region. It is estimated that there is at least two million eight hundred thousand indicated horsepower developed by the streams which have their headwaters on this watershed, and more than half of this indicated power is available for economic development.

Only a comparatively small part of this has been made use of yet, but the portion that has been utilized has been one of the most important factors in the recent industrial development of the South. In the future the use of this power and its value are bound to increase tremendously. Manufacturing plants are constantly increasing in number in the region, and it is reasonable

to expect that in time the center of the cotton-weaving industry in the United States may be moved from the streams of New England, where it has remained so long, nearer to the source of supply for the raw material.

Moreover, water power, or power originating in the streams, will be more and more in demand here, as everywhere else in the country, on account of the increasing cost of fuel power through dwindling fuel resources of the country. Already the water power costs much less than the fuel, and the difference will inevitably grow greater. One great difficulty of the users of water power, not only in the South, but along the New England streams as well, though possibly to a less degree, is the fact that it cannot be depended upon the year around, but must be supplemented and replaced for some weeks or months every summer by costly fuel power, because the streams run too low to be of service.

More than this, as the years go on mill owners are painfully aware that the low-water periods are growing longer and longer. This is because the forests at the headwaters of the streams are being cut off, with the result that the melting winter snows and the spring rains pour off the denuded and hardened land in devastating floods, sending down for a few weeks far more water than they can use, and, moreover, reducing the capacity and usefulness of their mill ponds by filling them with hundreds of tons of sand and soil which the floods scour off the unprotected upper slopes.

Nowhere are business men wider awake to the danger than in the South. If indiscriminate cutting of the forests on the crests of the watershed can be stopped, there is a possibility, according to a recent report of experts, of increasing the development of power up to anywhere from three to thirty times the one million four hundred thousand horsepower at present available. Without it, almost nothing can be done. The method proposed to develop the Appalachian river resources to the total of forty-two million horsepower is



by storage reservoirs, which would catch the surplus waters of the spring and retain them until the summer months, when the mills now have to fall back on fuel or close down.

The United States Geological Survey has kept records of stream flow in the Appalachians for a number of years and recently they made a careful study of the possibilities of storage reservoirs in that region. The Forest Service has published their report under the title "The Relation of the Southern Appalachian Mountains to the Development of Water Power," as Forest Service Circular 144, and will send it free to any one upon application. The experts of the Geological Survey who made the investigation, after picking out reservoir sites and estimating their capacity and the area from which they would receive the run-off, consider the figures given above extremely conservative. Even with only one million four hundred thousand horsepower, the annual return at \$20 per horsepower per year would amount to \$28,000,000. That is equal to a gross income of three per cent. on a capital of about \$933,000,000. These figures seem to justify a considerable outlay of money to achieve the benefits promised.

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#### Forest Service Supply Depot at Ogden

ARRANGEMENTS have been completed by the Forest Service for a central supply depot to be established at Ogden, Utah. Mr. A. M. Smith, who has been property clerk of the Forest Service at Washington for the past year, began the organization of the office about the middle of June, and after July 1 all National Forest supplies will be distributed direct from Ogden.

The establishment of this supply de-

pot at Ogden, a central point in the West, is in accordance with the policy of the Forest Service to do as much of its work in the field as possible. It is estimated that both time and money will be saved by having the distributing point at Ogden instead of Washington. It is expected that Western producers will meet the demands of the depot and cooperate with the Service in making the movement successful and in expediting business. In keeping with the same policy of the Service, a branch of the office of Engineering, which has charge of the extensive permanent works now under way on the National Forests, has been established at Ogden.

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#### Maps of the Grant's Pass Quadrangle

A NEW sheet of the topographic atlas of the United States, known as the Grant's Pass (Oregon) sheet, has been published by the United States Geological Survey. The region covered by the map extends northward from the Oregon-California line to parallel forty-two degrees, thirty minutes, which is about five miles north of Grant's Pass, and from the eastern border of range three W. to the eastern third of range seven W., corresponding to meridian 123 degrees to 123 degrees thirty minutes W. It shows large portions of Rogue River Valley and that of its tributary, the Applegate, as well as the Siskiyou Forest Reserve.

The map is of interest in connection with both forestry and irrigation, as it clearly shows the relation between the two in this part of Oregon. The broad alluvial valleys lying immediately north of the reserve contain many reservoir sites, which may be utilized in the development of irrigation and water power.



# FOREST CONSERVATION

## Paper Read at the White House Conference

By R. A. LONG

PRESIDENT ROOSEVELT in addressing a body of business men in June, 1903, among other things said: "The forest problem is in many ways the most vital internal problem before the American public to-day," and that "the more closely this statement is examined, the more evident its truth becomes."

I want thus early in my address to lend emphasis to this statement, for coming from such a source and from one so prolific of good deeds pertaining to public matters, and one who has given such careful study and arrived at such wise conclusions concerning so many of the live and vitally important subjects before us in recent years, it should induce our minds to be in a most receptive mood, and if what we have to say is true and practicable, it is advisable that it shall find such lodgment in the minds of our people as will compel action and result in carrying out the purposes for which this conference is called.

Since I was to be honored with a place on this platform I am glad this subject was left for me; for it has to do with a thrilling, throbbing, and beautiful life, which is less true of any of the other subjects to be discussed.

'Tis true, some of our forests, as it were, lay aside their beautiful gowns in the fall, passing apparently into sleep, in which condition they remain until spring, when again they don a garb even more beautiful—not of silk or satin, trimmed with gorgeous ornamentation of man-made goods, but of a kind fashioned by an artist who makes no mistakes, and never fails to please the most fastidious and artistic.

The remainder of our magnificent forests, and much the larger part, continues to wear its mantle of green, not only during the springtime and in the summer days, but defies the frosty fall season and the zero weather of the wintry days. The tree has ever been the symbol of life, strength, beauty, and of rest, and the eye of man cannot continue to look, day after day, upon these stately God-given queens of nature without their charm being reflected in his life, making him a healthier, happier, and better man; and their destruction means not only the removal of our most desirable natural resource, from a practical and utilitarian standpoint, but from the viewpoint of health, morality, spiritual-

ity, and beauty, their loss would be irremediable.

There is much more that might be said on the sentimental side of this subject, but I refrain and pass to the practical side.

I want to lay down, first, the broad proposition that, aside from the soil itself, no other natural resource compares with our forests. Can you think of one that comes so nearly supplying every want of man? From the tender, touching song we hear "There is no place like home"—that place so sacred to every one worthy to wear the title of man—and we know that there is no other resource under the sun that supplies so many homes in every essential as does the tree, especially as applied to the large majority of our people, those whose labors go hand in hand with the prosperity of our nation.

However crude the workman, with only an ax for his tool, he may go into the forest and build a comfortable home in which to live. The leaves and bark of the tree may be converted into clothing for his body, and the nuts and fruits give him sustenance. Look within the house, be it shanty or mansion, and the furniture will remind you of this natural resource.

The ties supporting the great railway systems of this country, and nearly all the buildings connected therewith, are of its product.

The mines—coal, copper, gold, silver—yea, all minerals, from the cheapest to the dearest, require its use for their production and our satisfaction.

Data gathered tells us we are using not less than one hundred sixty-five million cubic feet annually in this direction.

What of the millions and millions of tons of paper on which is printed the news by our great daily newspapers, making it possible for even the poorest inhabitants of all the nations of the earth to keep posted as to the daily happenings of the world?

It is claimed, and I believe truthfully, that at least ninety-nine per cent. of the products of our forests are used for practical and useful purposes; yet of the total quantity of these products but a small fraction is actually utilized, probably three-quarters going to waste.

It is conceded also that forests aid much in the utilization of our rainfall, as the leaves and branches of trees and the accumu-

lation of humus and leaf-mold resist the compacting effect of the raindrops, and hence the soil is kept loose, allowing the water to readily percolate. This covering of loose litter, twigs, etc., absorbs and holds back the precipitation, preventing its disappearing rapidly by surface drainage, goes largely into the ground, and as a subsoil or underground drainage, reappears in the form of springs, which being gradually fed by percolation from above, themselves feed rivulets or streams of perennial character. The snows of winter melt more gradually in forest-covered areas, giving more time for the water resulting therefrom to soak into the ground and pass off through the springs. The streams fed from such sources have a continuous supply to be used for irrigation or such other purposes as man may require.

On the other hand, when the forest lands have been denuded, the rainfall passes rapidly away, and its resulting effect is not long felt or seen excepting by the filling of the channels of the stream by slit, sand, and gravel washed from above, and the result of the waters having spread over the adjacent low lands, destroying crops, improvements, live stock and sometimes even the lives of the inhabitants. It is not unusual in some sections for the fertile valley lands to be destroyed by gravel, stones, and debris carried and deposited by the waters.

Water power exerted through electrical energy, and in operation in so many industries, is impossible without constant and uniform water supply, and this cannot be had except along streams whose head waters have an adequate protection of forest covering; otherwise, the erosion of the soil soon fills the reservoirs, and waters running unobstructed on the surface converge in great torrents, carrying logs and debris of all kinds, surging irresistibly through the river valleys, taking with it dams, gates, power plants, and destroying what it cannot carry away.

Originally the rivers and even the rather small water courses of our country were to a greater or less extent navigable. Their channels were deep, their waters mostly clear and free from sediment and silt. At the present time, owing to the deforestation of the lands along their banks, and especially of their head waters, the breaking up of the sod and the loosening of the soil consequent upon settlement and cultivation of crops, these channels, formerly deep, have been in some instances entirely filled, and everywhere rendered more shallow, until water transportation has ceased and river navigation has become almost obsolete on rivers which were once teeming with commerce.

Our Government is at great annual expense in the construction of levees, dikes, jetties, and other devices to prevent the destructive overflows, and in dredging and deepening the channels in order that sufficient depth of water may be obtained and preserved to encourage the re-establishment and preservation of our waterway navigation,

so that means of transportation, competitive with and supplemental to that furnished by our railroads may be had; a substantial proportion of the money and energy thus expended, if used in the preservation of our forests, would materially better conditions in this regard.

The western half of the United States contains enough fertile land, now barren and unprofitable, only because of insufficient moisture, to support under adequate irrigation a population of probably fifty million people; further than this, as it has been truly said, such population in the West would support a like additional population in the manufacturing districts of the East, and the two would support another large population engaged in the transportation and distribution of the commodities of commerce between them.

The possibility of such irrigation depends largely on the preservation of the forest cover of the mountains, which catches and holds the melting snows, and thus forms the great storage reservoirs of nature.

We have been for many years, and are now, using all our resources of diplomacy, and even almost threatening at times to reinforce it, if necessary, by our naval and military strength, to maintain an "open door" in the Far East for the benefit of our commerce, while at the same time we have only dimly realized the possibilities of building up an empire in our midst, whose yearly requirements of the commodities of commerce would equal the requirements of an equal number inhabitants of the Far East for a generation, and the annual purchasing power of whose productive activities would amount to more than all the goods we could hope to sell through the "open door" in possibly more than a quarter of a century.

We have it upon the authority of the Holy Writ, that a thousand years before Christ the eastern shore of the Mediterranean was the seat of large cities having an extensive maritime commerce. The mountain region bordering east and west, extending for many miles inland, was covered with a dense forest, comprising the cedar of Lebanon, the fir and the sandal wood, covering an area of three thousand five hundred square miles. The inhabitants of Sidon were largely engaged in cutting, hewing, and shipping timbers from the forests of Lebanon, and the seat of Sidon was a great lumber market, and its citizens skilled ax-men.

The cities of Tyre and Sidon were largely constructed of wood; their ships built of cedar, the masts of fir, and oars of oak. Solomon procured all of the timbers used in the construction of the Temple, as well as in other buildings, from the forests of Lebanon by a contract therefor with Hiram, King of Tyre, in whose dominion they lay, and he supplied eighty thousand laborers to assist in cutting and hewing the trees. The timber was loaded into ships and conveyed to Joppa, thence by land to Jerusalem. The region about Jerusalem was fertile, and Solomon

provisioned more than one hundred fifty thousand men for a period of perhaps twenty years, and supplied Hiram with one hundred fifty thousand measures of wheat, with as much barley, besides one hundred fifty thousand gallons of wine, and a like quantity of oil annually, from which we must understand the country was rich and productive. These forests have all been destroyed, with no renewal thereof, and with their destruction disappeared the fertile soil. The rain-bearing clouds still float above the mountains of Syria, but they pass on over the bare and heated rocks, and the brooks and small streams of Palestine no longer exist, and throughout Syria stone furnishes the only material for building, and wood is as precious as silver.

May it not be true that the destruction of Tyre and Sidon was in great part in consequence of the destruction of these forests, which has rendered that country a barren desert, supplying a scanty sustenance to the sparse population—its beauty, its fertility, its usefulness gone? So the physical geographers assure us.

In "Sinai and Palestine," by Dean Stanley, an authoritative record, appears the following:

"The countless ruins of Palestine, of whatever date they may be, tell us at a glance that we must not judge the resources of the ancient land by its present depressed and desolate state. They show us, not only that 'Syria might support tenfold its present population, and bring forth tenfold its present product,' but that it actually did so. And this brings us to the question which eastern travelers so often ask, and are asked on their return, 'Can these stony hills, these deserted valleys, be indeed the Land of Promise, the land flowing with milk and honey?'"

The effect and influence of forests on the climate, health and water conditions of the country is evidenced by the chronicles of the Mosaic, the Roman and the Greek writers, and many of their far-seeing priests prevented the destruction of the forests. The consecration of groves to religious uses and to various mythological rites connected with them is an evidence of the reverence the ancients had for forests. Homer calls the mountain woodlands the "habitations of the gods, in which the mortals never felled the trees, but where they fell from age when their time had come;" and in his "Tree and Woodland Nymphs," originating in springs, he suggests the intimate relation of forests and springs.

Aristotle, in his "National Economy," points out that an assured supply of accessible wood material is one of the "necessary conditions of the existence of a city."

Plato writes that the consequences of deforestation is the "sickening of the country." Cicero, in one of his philippics, designates those engaged in forest devastation as the enemies of the public interests.

Mesopotamia, one of the most sterile countries in the East, was once praised on ac-

count of its fertility, where, according to Herodotus, "the culture of the grape could not succeed on account of the moisture;" and the Euphrates River, once the source of an ample water supply, is swallowed up in this desert.

Greece shows the progress of a similar decadence. Sicily, once the never-failing granary of the Roman Empire, while it was well wooded, is now entirely deforested and crop failures are the rule. Cæsar and other Roman writers describes the "vast forests" throughout the entire territory. Since then, thousands of square miles have been deforested. Many countries, where the destruction has been most reckless, have taken systematic measures to control the destruction and secure the reproduction of exhausted areas. To this they have been driven, not only by the lack of timber and fuel, but also by the prejudicial effects exerted upon the climate and the irrigation of the country by this denudation.

In Denmark much of the woods, which at one time covered nearly the whole country, having been cut down to make way for agriculture and to supply fuel and timber, the vast area thus bared has become a sandy desert. Parts of Bohemia, Hungary, and Austria have been rendered practically valueless, because the growing forests were destroyed.

In France, the frequent inundations of the last fifty years were caused, as is stated by writers, by the deforesting of the sources of the Rhone and the Saone. Since that time, thousands of acres are annually planted, and where the forests have been restored, the conditions have changed for the better.

In Encyclopedia Britannica, volume 6, page 4, it is said: "Hence, the essential difference between the climate of two countries, the one well covered with forests, and the other not, lies in this, that the heat of the day is more equally distributed over the twenty-four hours in the former case, and therefore less intense during the warmest part of the day; hence the nights are warmer and the days are cooler in wooded districts." And so it is also said, "Nothing is more certain than that forests not only prevent evaporation of moisture by protecting the surface of the earth, but they serve to retain the light clouds which otherwise would be distributed until they contain sufficient consistency to descend in rain or refreshing mists."

In the American Forest Congress in 1905 the Hon. John Lamb quoted the following from Bernard Palissy, which is so pregnant of truth that it will bear repeating: "For when the forests shall be cut all arts shall cease and they who practice them shall be driven out to eat grass with Nebuchadnezzar and the beasts of the field. I have at divers times thought to set down in writing the arts that would perish when there shall be no more wood, but when I had written down a great number, I did perceive that there

will be no end of my writing, and having diligently considered, I found that there was not any which could be followed without wood, and I could well allege a thousand reasons, but it is so cheap a philosophy that the very chamber wenches if they do but think may see that without wood it is not possible to exercise any manner of human art or cunning."

China has paid absolutely no attention to the preservation of her forests; hardly a twig left in what was her great forest fields, while Japan, close by, has fifty-nine per cent. of her total area under forests, and the Government has reserved under its control a very large part of the whole. Compare the conditions of these two countries, side by side, and draw your own conclusions. While practically all other countries are effectually practicing forestry, none of them, I believe, save Sweden and Russia, foresaw the difficulties toward which they were drifting—at least, made any effort to provide against them until they found themselves importing lumber in great quantities.

One nation, Germany, paid out in a single year \$80,000,000, and still their timber reserves are being depleted at a rapid rate. Realizing into what condition she was drifting, she set at work to remedy the evil, and to-day is in the forefront in working out this great problem, and it will not be many years before she will be producing an annual crop equal to her consumption. This is most commendable, but it would have been much less expensive and more businesslike had she have exercised the same judgment and forethought in the matter our leading business men make use of in handling the problems affecting their interests to-day. As is usually true, those spending the most money in the development of an industry obtain the best net results. To illustrate, Germany and France are spending about \$11,000,000 a year and reaping \$30,000,000 net; while we, last year, spent \$1,400,000, receiving \$130,000.

Considering all of the above, coupled with the fact that from the viewpoint of the value of annual production, it stands as the fourth greatest industry in the United States, being exceeded only by, first, food and kindred products, the annual value of which is \$2,845,234,900; second, textiles, annual value \$2,147,441,418; third, iron and steel and their products, annual value \$2,176,739,726; lumber coming fourth, annual value \$1,223,730,336; which pays annually in wages about one hundred million dollars, providing an income and living for something like two million of our people. Can it be passed lightly by without bringing the censure of the generation that will live after us, upon our heads?

But need we say more of the important part forests play in the affairs of our country, or what bearing they have had and are having on the nations of the world? It seems to me we should determine, if we can, the life of our forests under existing condi-

tions and upon the course necessary to their perpetuation.

In January, 1903, I prepared a paper on the subject of stumpage, to be read at a convention of lumbermen. I spent a vast deal of time in gathering the data necessary to its preparation; I took into account only the white and Norway pine of the Lake States the yellow pine of the South, and the timber growing in the states of Oregon, Washington, and California, as they were the only woods entering in any large way into the lumber supply of this country, calculating that long before any of the woods in question had been exhausted, practically all other woods in our nation would have largely passed out of use.

My investigation led me to make a statement that the timber in the Lake States would not exceed sixty billion feet; that within ten years it would probably play no larger part in the lumber supply of this country than did poplar at that time. I see no reason to change that statement unless the effects following our recent panic, which are very depressing on the lumber industry, should continue longer than is now expected.

As to the life of the southern yellow pine, I gave it as my belief, that eighteen years would find it cutting no great figure in our lumber supply. I am more convinced of the correctness of this statement now than I was then. Adding the white pine, yellow pine, and Pacific coast products together, my estimate was that the life for all was forty-one years. I am not so sure as to the amount of timber on the Pacific coast, but I do not believe the total life of all will vary to exceed five years from the date indicated.

Some calculate that substitutes, such as cement, will likely curtail the demands for lumber; judging from the experience of other countries, it will not; even in England, where nearly all of the lumber used is imported, their lumber consumption per capita is increasing at the rate of five per cent. per annum. In France and this country it is increasing at the rate of ten per cent. per capita. But why speculate on our timber supply, a question of such great importance to this nation, when definite information can be had? It is unlike any of our other natural resources. It all stands above the ground and can be estimated with great accuracy. Men and money are the only means necessary for securing this valuable information. The former can be had by supplying the latter. Should a nation as rich as ours hesitate to furnish the means required for information of such great value?

My plan would be to take our timber areas, and, working them by counties, parishes, or townships, make a complete estimate, as if a purchase was to be made; where the timber was practically the same in several counties, townships, or parishes near each other, a careful estimate of one, and a reckoning of others on the same basis, would be sufficiently accurate for all purposes. This would



give us a correct basis to start with, and from which intelligent statements could be made in the future.

The owner of a given piece of property is controlled, as to retention or disposition, largely by the net results that may be obtained at different periods. Carrying charges, or the expense incident to holding a commodity or article of commerce, enter very largely into such calculations. Taxes constitute a large part of such charges, and have no little bearing on the subject under consideration. Instead of timber lands being favored in order to encourage their conservation, not only for the benefit of the owner, but for the use of generations yet unborn, they are not given an even chance with other properties.

The crop of the farmer is taxed when it is ready for the market, and no crop is taxed more than once. A crop of timber is taxed continuously and annually until disposed of. The farmer's crop matures yearly; the crop of the timber owner matures once in about a hundred years.

Let us illustrate: As the value of the timber is less in its earlier years than when matured, we will use fifty years as the average life, basing the value on the matured product. Rice, cotton, and sugar lands in some sections of the South, in close proximity to timber lands, are assessed at about the same prices as timber lands. The rice, cotton, and sugar lands net the owner at least \$7.50 an acre annually after paying taxes and all other expenses. In fifty years the owner would get \$375 off of each acre of his land, besides obtaining enough annually to pay his taxes; the land itself being worth \$50 per acre, making a total of \$425, plus the interest on the money made annually, while the timber owner could not get more than \$120 per acre in the gathering of his entire matured crop, after spending a goodly fortune in building a plant preparatory to its harvest. Again, the cut-over lands are taxed practically their full value, thereby making it burdensome to carry them, much less to spend anything on them for the purpose of reforestation.

The effect of such laws is shown in the state of Michigan, where over six million acres have reverted to the state. A like condition, to a lesser extent, exists in other states. I find the constitutions of several states permit them to exempt such properties from taxation; others permit them to classify; others to either exempt or classify.

And now we come to the vital point of the subject, namely: the conservation and perpetuation of this great resource. In dealing with this subject as it now presents itself to us, it become necessary to dwell on some features that directly and immediately affect the interests of the timber owners. Belonging to that class, we would refer to these features with some embarrassment, did we not feel it had been our purpose, in preparing these thoughts for your consideration, to treat them on broader and more patriotic lines than any exclusively selfish idea would

permit; besides, we believe the thoughts presented will appeal to you as eminently fair and correct, and will of themselves prevent your ascribing to us a selfish motive.

I want to give especial emphasis to the statement that conservation and perpetuation of our forests and unremunerative prices for lumber cannot travel the same road, for conservation means to handle, to treat, to take care of, and save in such manner as to retain the use or benefit of a given product as long as possible. Perpetuation of forests means to so exploit the forests as to make them continuous and perpetual, which can only be done by spending money continuously in planting, seeding, protecting, etc., while *low prices of any commodity means neglect and waste*. This cannot be more forcibly illustrated than by the conditions existing today, as applied to lumber; on account of the low prices now prevailing, the logs making low grade lumber, secured principally from that portion of the tree approaching the limbs, and constituting at least twenty per cent. of the forests, are left in the woods to rot or be burned, because the lumbermen would no more think of using the raw material out of which he could not obtain cost, than the farmer would harvest a crop of faulty corn out of which he could not obtain the cost of gathering.

This leaving of twenty per cent. of our logs in the woods—as applied to the yellow pine industry alone—if we market as much lumber this year as last, means that we will have wasted over three hundred thousand acres of forest land, and so, in order that the product of these low grade logs may take their place in the lumber supply of the world, and our timber saved or conserved, the manufacturer must at least have cost for his low grade lumber, which means a comparatively better price for the better grade; and this need not necessarily mean high priced lumber, but the price must be removed materially from the prices now prevailing, and such as we touch periodically, even in normally good times; for lumber is like every other product, controlled by supply and demand, and if we build mills with sufficient capacity to supply the demand of the country in times of extreme activity, such as we had in 1906 and the first two-thirds of 1907, we will have capacity beyond our requirements in normal times, and under such conditions down go the prices.

On account of such varying and unstable conditions, it will be found difficult, if not impossible, to get the timber owner to enter actively into the methods required for the perpetuation of the forests by spending even the minimum required, which I understand to be about fifty cents per thousand. While this does not seem a large amount, there are concerns making as much as two hundred fifty million feet of lumber per annum, and hence to these, the cost of this item would be \$125,000 per annum. If his or its competitor was pursuing the same practice, all would be



well; if not, he would, for the immediate present, be out that much more money than his competitor, and during dull periods, such as now, when prices were close to the cost line, even for the better grades of lumber, he would hardly feel disposed to contract for such an outlay.

The Government only owning about twenty-two per cent. of our forest area, cannot alone, to any great degree, effect what we are seeking in this conference, so far as forests are concerned. It might, however, accomplish the purpose in one of the following ways:

*First.* The Government could, by a contractual relation with the owners of the forests where lumbering operations are now being carried on (who constitute at least eighty per cent. of the timber holdings of the United States), provide that conservation and reforestation should be practiced under rules prescribed by the Forest Service, and assess the cost thereof against the timber lands proportionately. These rules should provide that the lumbering operations, so far as conservation and reforestation were concerned, should be conducted under governmental control; that no more timber should be cut than was necessary to supply the current demands, thus maintaining such uniformity of prices as would justify the operator to utilize every log the tree would produce; that only trees of a certain size should be cut; that seed trees, properly distributed, should be left; that the young growth should be protected from fires and other elements of destruction, and it would seem clear that the establishment of such a relationship would certainly accomplish this highly desired object.

*Second.* A plan might be worked out jointly between the owners of the timber lands, and the Government, by which conservation and reforestation would be practiced along such lines as the Government might lay down, as outlined above, and the timber owners be protected in the prices of all lands cut over and handled under the conditions prescribed.

Whatever plan is adopted must furnish an incentive, a substantial inducement to the timber owner, to forego a present gain for the public good, and in this matter it can only be accomplished by governmental co-operation. And what is done should be done quickly, for the time is fast approaching when our forests will be so nearly gone that it will be too late.

Will the Government avail itself of this golden opportunity to lend its aid to the conservation of this splendid natural resource, in order to supply the timber for future generations; be wise and patriotic enough to provide for the inevitable result that must occur before the middle of the twentieth century, and thereby perform the true function of all good governments in the promotion of the health, wealth, and prosperity of the people? Or, with climatic

changes following the destruction of our forests, shall manufacture die with them, and commerce fail as a natural result of agricultural and manufacturing decadence?

Disclaiming all partisan or political references, and speaking only of economic conditions as we find them, I do not think I should neglect to say that the present demoralizing conditions existing in our commercial and manufacturing life, and the consequent waste and loss incident thereto, and especially incident to the wasteful destruction of hundreds of thousands of acres of timber annually is, in my judgment, due largely to the pernicious effect of that class of legislation which, by its application, has placed an absolute prohibition on every form of agreement looking to conservation; has placed a ban upon all meetings and discussions having for their object the adoption of the most salutary measures for the preservation of this natural resource, and the instant and unfair denunciation of every meeting of the so-called "Lumber Trust," which does not and never did exist; has produced such a condition of mind among lumbermen, that they feel that they can no longer meet together for the general discussion of matters so vitally affecting their interests and the welfare of this nation, without subjecting themselves to the humiliation of a prosecution. This condition in the lumber business has led to the reduction of the wage scale of hundreds of thousands of men, affecting many millions of people; it has left twenty per cent. of the timber in the forest to waste; and unless we have relief, these evils will increase and others will follow in their wake.

Attempts at compulsory competition is our present commercial nightmare. Such competition is not healthy but disastrous, and serves only, in the end, to create the most pernicious monopoly by destroying all competition—it means the survival of the *strongest* and not the *"fittest."*

Is it not sufficient for all that our resources should be conserved and saved for all generations; is it right or just that a great industry should suffer, and generations to live hereafter be deprived of an adequate supply of lumber, in order that a prejudice be vindicated, and the consumer of to-day buy his lumber at less than cost?

And in this connection, it may be well to say that a reduction of our tariff on lumber would at once bring us into direct and disastrous competition with lumber from Canada, where stumpage is cheaper and wages lower, and where the consequent tendency toward wastefulness necessitates corresponding disregard on our part. Waste is loss, and adds nothing to consumption. We want greater consumption, but we should conserve and reproduce, not waste.

The part played by the United States Steel Corporation since its organization, in the maintenance of staple prices, while obtaining a profit and not improperly using its power, is a most substantial demonstration of the

salutary effect of concentrated control of any commodity in the interest of uniform prices and conservatism, without injury to the consumer or harm to any one.

The American people have common sense, are patriotic, and fair, and a full understanding of the real conditions confronting us will appeal to their good sense, and they will support any measure of true relief.

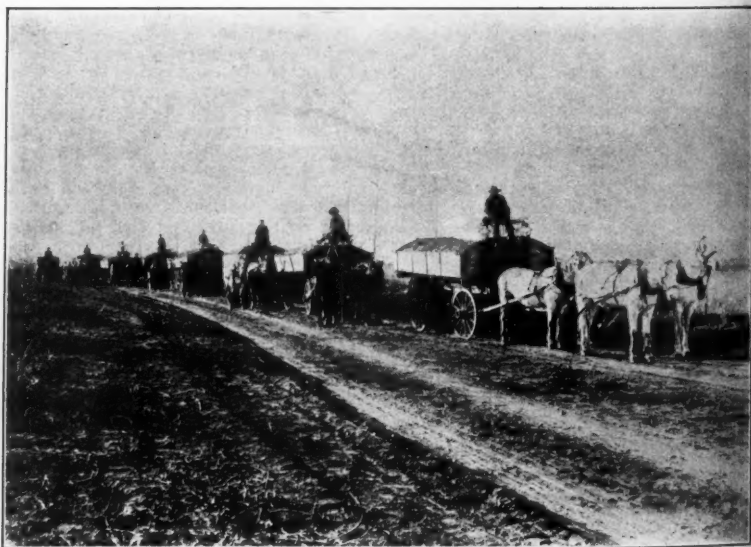
And now, Mr. President, before closing, I want to say again, aside from the soil itself, this is the most important natural resource at the command of the American people to-day. It has its most intensely practical side, but is not by any means devoid of its sentimental side, the absence of which from human breast, leaves one devoid of one of the most beautiful attributes of human kind. One that possesses this finer nature has said:

"A tree is one of nature's words, a word of peace to man;  
A word that tells of central strength from whence all things began;  
A word to preach tranquility to all our restless clan."

"Ah, bare must be the shadeless ways, and  
bleak the path must be,  
Of him who, having open eyes, has never  
learned to see,  
And so has never learned to love the beauty  
of a tree."

"Who loves a tree, he loves the life that  
springs in star and clod,  
He loves the love that gilds the clouds, and  
greens the April sod;  
He loves the Wide Beneficence; his soul  
takes hold on God."

I am happy in the thought of this conference for the purpose of discussing this and kindred subjects, and shall hope that we may not rest satisfied in the thought that there is plenty for our day and generation, for such a thought means selfishness; selfishness means littleness. Anything that is small is prescribed by a very limited circle; and I venture the statement that there is no place of comfort or happiness in the universe of God or the realm of man for such an individual.



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